THE INFLUENCE OF OIL AND NATURAL GAS ON LOCAL SALES AND USE TAX RECEIPTS: EVIDENCE FROM OKLAHOMA PANEL DATA

By

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Title of Study: THE INFLUENCE OF OIL AND GAS ON LOCAL SALES AND USE TAX RECEIPTS: EVIDENCE FROM OKLAHOMA PANEL DATA

Major Field: AGRICULTURAL ECONOMICS

Abstract:

Purpose: Recent volatility in the oil and natural gas markets has led to questions about how local government revenues might be affected. This paper attempts to quantify the relationship between changes in oil / natural gas production and local sales / use tax collections.

Methods: Panel data for 73 Oklahoma counties over 2003-2012 is used for the analysis. This includes oil and natural gas production value, sales/use tax collections by SIC code, number of well completions, and control variables such as unemployment and median household income. A fixed effect panel regression model is used to reveal relationships between energy production and sales / use tax collections as a whole and by SIC code.

Findings: Preliminary results suggest that after controlling for time and fixed effects, an increase in oil and natural gas production is not associated with a corresponding increase in overall retail sales tax collections. However, sales tax collections for specific SIC codes such as those for food, fuel, and furniture, *are* affected by the number of oil and natural gas well completions and the value of natural gas production in a county.

Conclusions: The data shows that recent increases in Oklahoma energy production have had a positive effect on local sales tax receipts, with some sectors benefitting more than others.

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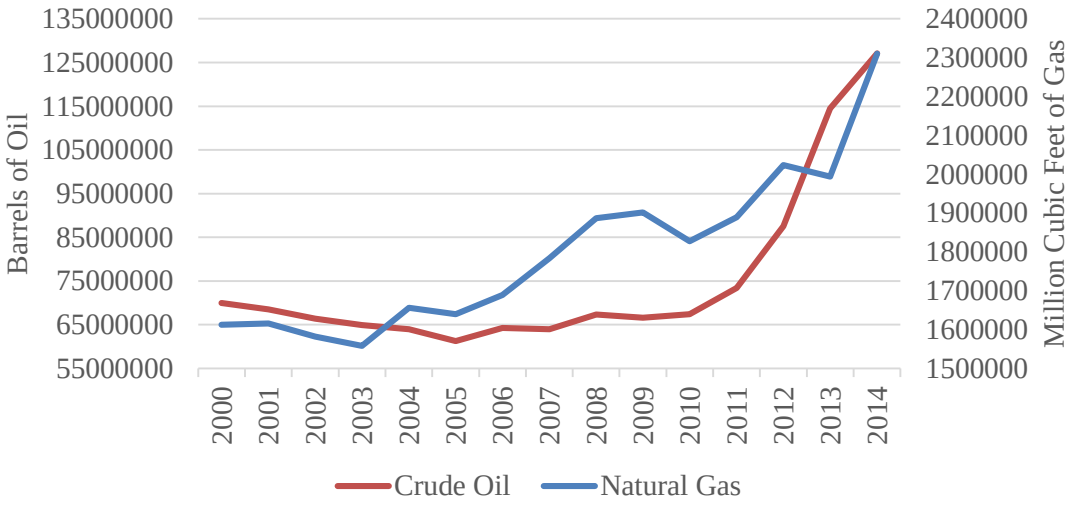
CHAPTER I

INTRODUCTION

Over the last decade, rural economies and infrastructures have been affected by increased production during the recent oil and natural gas boom (Raimi and Newell, 2014). This holds true for the state of Oklahoma, which has traditionally been strong in these industries. Estimates suggest that, while oil and natural gas production in Oklahoma has generally increased since 2003, a dramatic rise has been seen since 2010. This is shown in Figure 1 below.

Figure 1. Oklahoma Crude Oil and Natural Gas Production
Source: Oklahoma Corporation Commission



During that same time period, oil and gas companies in Oklahoma received gross production tax breaks ranging from three to six percent to incentivize technological advances in extraction techniques (Blatt, 2012). From fiscal year 2010 to fiscal year 2012, an estimated $645 million in gross production taxes were paid to rebates for unconventional drilling techniques.

Proponents of the tax breaks, note, however, that increased drilling activity leads to other revenue opportunities for cities and counties. These include sales tax, use tax and property taxes, which may rise with increased oil and natural gas production and are significant sources of revenue at the city and county level.

There are also expenses incurred with increased drilling activity, namely, road/bridge maintenance, sewer/water infrastructure, and county employee salaries (Raimi and Newell, 2014). This study hopes to identify areas where increased oil and natural gas production are affecting Oklahoma counties. Since early 2015, however, the prices of oil and natural gas have fallen dramatically, ultimately affecting the state budget and causing energy production to decrease. With production slowing and oil prices falling, local governments face questions about how they should plan for the future. This research hopes to quantify how changes in oil and natural gas production impact specific categories of taxes collected, while also considering some of the associated costs. Research has yet to uncover how Oklahoma counties are responding to the changing energy sector, specifically in areas of retail sales tax, use tax, and county road expenses.

In terms of revenue, this study will consider the collection of sales and use tax, as reported by the Oklahoma Tax Commission, at the county level over a specific period of time. Sales tax is generated from everyday transactions of personal/tangible goods and services within the state while use tax is a tax on goods/services bought by firms in Oklahoma from businesses outside of state lines. For example, if Payne County experiences an inflow of workers to drill new wells for an energy company, those workers would be expected to cause local sales tax collections to increase through their consumption of local goods and services (i.e. fast food restaurants, clothing, and fuel). Many companies participating in oil and natural gas production, however, are based out-of-state and could cause a rise in use tax without affecting sales tax. Equipment purchased by Chesapeake Energy for the completion of a natural gas well may come from a firm outside of the state of Oklahoma and this would generate use tax instead of sales tax. These taxes are useful indicators of

the economic health of Oklahoma counties (indeed, they are typically the primary sources of county revenue) and will be coupled with several measures of oil and gas production to highlight relationships between each. One particularly noteworthy contribution of this study will be to look at retail sales tax collections by Standard Industrial Classification (SIC) codes. Thus, it will attempt to measure the impact of increased oil and gas production on *specific* retail sales categories such as: food stores, clothing stores, and building materials/hardware. Ideally, regression analysis will shed light on the types of retail stores that are affected most by the oil and natural gas boom in a given area. It is important to consider the spatial component of this evaluation. Production workers are not limited to making purchases in the small towns in which their employment takes them. It is expected that larger cities in rural counties will attract workers from neighboring small towns for things like clothing, food, and entertainment. For this reason, models that incorporate spatial relationships will be an important part of accurately assessing any existing relationships.

Rural citizens might experience the effects of an oil and gas boom through increased traffic in town, population increases, or declining road conditions, but are likely unaware of the fiscal implications. What factors affect road conditions in these areas, and are those factors quantifiable in order to make informed decisions about managing the costs of a deteriorating infrastructure system? Although anecdotal evidence suggests that there is a link between deteriorating road conditions and drilling activity (Wilmoth, 2013), no formal evidence from Oklahoma currently exists. This study will consider oil and gas production, well completions, and spatial effects of oil and gas production in an attempt to quantify how each factor contributes to annual expenditures on roads. Ideally, the report will identify the extent to which increased spending on roads is driven by local energy production activity.

Several measures related to oil and natural gas production will be used in this study to measure the activity of this particular energy sector. Historic annual production numbers (multiplied by annual price to determine value), annual well completions, and average production

in surrounding counties will be gathered at the county level. Regression analysis will allow insight into which of these measures is most important for driving changes in the dependent variables listed: sales/use tax, county road expenditure, and retail sales tax collections by SIC code. Oil and natural gas production data provides a look at the total end product of the mining process on an annual basis. Alternatively, the use of well completions may provide a more precise measure of specific drilling activity in Oklahoma counties. It is very possible that this 'start up' drilling activity might have more of an impact on local tax collections than will the continual production once a well head is complete. The regression techniques utilized in this study will determine which of these measures has the largest marginal impact after controlling for the other economic variables that could also affect the outcome measures of interest.

This study will consider the effects, both positive and negative, of increased oil and natural gas production on local economies in Oklahoma. Specific objectives are to:

1) Quantify the relationship between measures of oil and natural gas activity and county-level sales/use tax (paying particular interest to specific SIC codes), namely:
    i. Value of oil and natural gas production
    ii. Spatial effects of oil and natural gas production in surrounding counties
    iii. Number of oil and natural gas well completions
2) Determine to what extent changes in county road expenses are related to increased drilling activity or increased value of production.

One particular advantage of this study is the use of panel data, since information on all 77 Oklahoma counties is gathered over the years 2003-2012. Utilizing the information gathered on the points above, this study hopes to quantify some specific ways that Oklahoma counties have been affected by the recent oil and natural gas boom. Some specific hypotheses related to the objectives are:

- That the value of oil and natural gas production (as opposed to number of well completions) will have the largest effect on the deterioration of county roads,
- That sales and use tax will be higher in counties with elevated levels of oil and natural gas production/well completions/new drilling,
- And that the relationship between oil and natural gas production and retail sales tax collections will be seen in specific SIC codes such as:
    - Building materials/hardware (SIC 52), food stores (SIC 54), automotive/gasoline businesses (SIC 55), and furniture stores (SIC 57).

As the following literature review details, a significant amount of work has already been done on the relationship between oil and natural gas activity and local economies. This paper adds to this body of literature by considering *Oklahoma counties* and the effects seen on retail sales tax collections, road expenditures, and specific SIC codes when oil and natural gas production is in a boom phase. Notably, the relationship between oil /gas production and retail sales tax will be broken down to specific SIC codes, something that has not been done to date. Additionally, the use of panel regression techniques is a unique contribution to this literature and should help break out simple time and county-specific trends from the actual impacts of oil and natural gas activity.

CHAPTER II

REVIEW OF LITERATURE

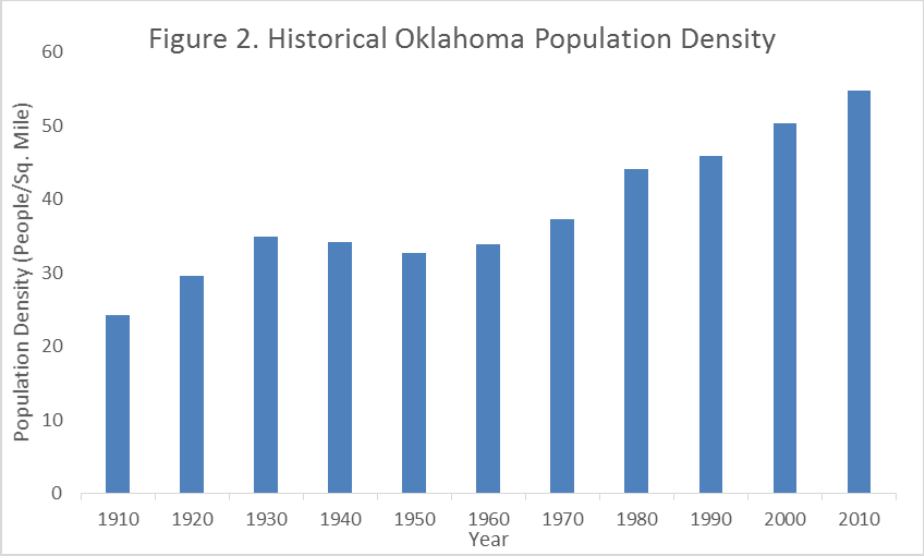
The existing literature detailing the economic effects of energy production (specifically oil and natural gas production) on cities, states and counties displays both great breadth and depth. As this section will discuss, prior studies have considered effects as small as changes in municipal salaries and as large as the impacts energy and natural resource development makes on a county's overall economic well-being. To begin, a brief overview of oil and natural gas production, history and recent technological advances will be discussed. This overview will be followed by an introduction of Oklahoma's energy policy issues in terms of tax incentives, alternative/unconventional extraction methods and proposed solutions to challenges faced by the state. Case studies and similar research conducted outside of Oklahoma will be examined for similarities and useful links between previous results and this research that look to explain how counties are affected by elevated oil and natural gas production. A brief discussion of previous research in the validity or existence of a "natural resource curse" as well as the essential role of municipal government planning will also be included to communicate prior results and shape the focus of this paper.

2.1 Oil and Natural Gas Production: Then and Now

Oil and natural gas production is an area of economic interest that has been studied very heavily in the last four to five decades. Since the mid 2000's, the energy sector has experienced booming growth including a tenfold increase in U.S. production of natural gas (Weber, 2013).

Since the late 1990's and early 2000's, the adoption of horizontal drilling, deep well drilling, and hydraulic fracturing has increased. The claim has been made that hydraulic fracturing and unconventional drilling are new technologies, but the reality is that both were developed early in the 20th century (Burnett and Weber, 2014). However, the technology was not readily utilized until the last twenty years when Mitchell Energy Corporation and Devon Energy Corporation combined horizontal drilling with hydraulic fracturing to remove natural gas from shale formations deep beneath the ground. Their technological hybridization, coupled with increasing oil and natural gas prices, allowed for a process that was once too expensive to become economically feasible.

In today's energy landscape, the "traditional" boomtown looks very different from its historical counterpart. In historical oil and natural gas production, the drilling and extraction of the resources were mostly isolated to a single area (Jacquet & Kay, 2014). Early on in the production of oil and gas, towns and communities were farther apart and more sparsely populated. Figure 2 below shows the increase in population density for Oklahoma counties over the past 100 years. Since 1960, the state of Oklahoma has become significantly less isolated, and Jacquet & Kay (2014) argue that this change makes the state more resistant to negative energy boom side-effects. More people in a given area translates to less dependence on one particular industry for the revenue to support a local government and its economy.



Additionally, technology advances have allowed the human population to become more connected than ever before. Jacquet & Kay discuss two main ideas that have changed over the last few decades of oil and gas production in their 2014 article on boomtowns. The first concept, as noted above, is the change in rurality and isolation versus the people dense towns/counties seen today. The second idea deals with the shift of non-local ownership to corporations owning the oil and natural gas production wells (Feyrer et al., 2015). In fact, Feyrer et al. showed that only 13% of production value remained in the county where it was produced. Today, the increasingly more dense areas are better equipped to manage population increases and increased demand for services than the isolated towns of yesterday. In a previous study, Stedman et al. (2012) discuss similarities between historic boom-towns and those seen today such as: motorist congestion, increased tax rates, pollution, crime and inflation. They also note changes in the current boom-town model, like environmental and health risks as well as more involved citizens in the community landscape. Stedman et al. (2012) specifically note the environmental concerns associated with hydraulic fracturing and how the process can use an estimated 3-5 billion gallons of water on a single well. Along this same line of thought, the Department of Environmental Protection in Pennsylvania has also voiced concern about the impacts caused by leaks, spills and even explosions associated with natural gas production in the state.

Stedman et al. (2012) conducted a survey of Pennsylvania and New York resident's perceptions of the booming natural gas extraction in their area. Pennsylvania extraction had been ongoing for roughly three years, while New York's natural gas production had been stunted early because of the concern of its citizens. Rural, southern New York and northern Pennsylvania are economically similar, but the study hoped to capture perceptions in contrasting areas: one that was in the middle of a natural gas boom, and one where activity is natural gas had been halted because of the voice of citizens. The study found that most citizens (in both areas) had similar levels of

knowledge about the effects of natural gas production, and that both areas could be described as in favor but uncertain about natural gas production in their community (Stedman et. al., 2012).

2.2 Policy Implications

According to Weber (2014), the ability to estimate the effects of an oil and gas boom on local economies is pivotal in providing policy makers with information about maintaining, increasing, or decreasing tax incentives for energy companies. In the 1990's Oklahoma legislators passed a bill that provided tax rebates to oil and gas companies in order to incentivize the use of unconventional horizontal drilling and hydraulic fracturing. This was at a time when such drilling practices were virtually nonexistent. For oil and natural gas production in Oklahoma, the standard gross production tax rate is 7%, but that rate falls to lower percentages when the prices of the commodities fall or if certain unconventional extraction techniques are used (Blatt, 2012). Techniques such as horizontal drilling or deep well drilling may yield a drop in tax percentage from 7% to 4%. There are seven categories of production that lead to these rebates and most deal with new methods of extraction techniques.

As these drilling procedures have become more common, lobbyists and lawmakers in Oklahoma remain interested in those gross production tax rebates that influence the annual state budget. Additionally, a recent decrease in the price of oil and natural gas since early in 2014 has caused a significant budget shortfall in the Oklahoma State Budget. A decrease in the price of oil and natural gas also triggers a decrease in the gross production tax rate applied to oil and natural gas production in the state. In times of economic hardship, critics of the gross production tax rebates are more vocal about the need for legislative reform. The Oklahoma Policy Institute has produced several papers and is actively advocating for the re-evaluation of our state's current gross production tax policy. An article published by the Oklahoma Policy Institute estimated that $645 million was paid to oil and gas producers in the form of gross production tax rebates from fiscal

year 2010-2012 (Blatt, 2012). Recently, the Oklahoma House of Representatives heard and passed HB2562 which raises the lowest tax rate of 1% up to 2% for new wells drilled on or after July 1, 2015. It should be noted that these tax rebates are only allotted for newly drilled wells and only last for the first three to four years of production. The first few years are generally the most productive.

The State Chamber of Oklahoma, a lobbyist group for Oklahoma businesses, has argued against the elimination of tax rebates. In their annual Oil and Gas Policy Report, the State Chamber makes the claim that no one area of well exploration is the same and each well location requires experimentation with drilling and "fracking" inputs to determine the optimal combination (Snead and Jones, 2014). With that experimentation, additional costs arise that can become quite expensive given a large number of new wells for a company. The State Chamber and the energy companies it represents believe that the tax rebates incentivize oil and gas production on Oklahoma land as opposed to other states, as well. On the other hand, a survey by the Oklahoma Policy Institute found that oil and natural gas producers ranked state tax incentives last (out of 10 other choices) when considering the development of a new well (Blatt, 2012).

2.3 Case Studies from Other States

Raimi and Newell (2014) collected and analyzed data from non-metropolitan counties in U.S. states that recently exhibited significant oil and gas production increases. The researchers considered primary and secondary data during their study, collecting data from state and county officials by means of surveys, in-person interviews, and hard data from reporting agencies. Each county in the study, with few exceptions, was contacted and surveyed about their experiences with the energy sector during a time period of increased oil and natural gas production. Raimi and Newell (2014) discovered that a clear majority of the states experienced *positive* economic growth during or shortly after a production boom. Table 1 below shows the effects seen by counties and municipalities according in terms of financial impact.

Table 1. Net Financial impact for local governments examined in the study

State	Counties	Municipalities
Arkansas	Medium to large net positive	Small to medium net positive
Colorado	Small negative to large net positive	Small to medium net positive
Louisiana	Medium to large net positive	*Insufficient data*
Montana	*Insufficient data*	Neutral to large net negative
North Dakota	Small to medium net negative	Medium to large net negative
Pennsylvania	Small to large net positive	Small to large net positive
Texas	Neutral to large net positive	Neutral to large net positive
Wyoming	Large net positive	Neutral to small net positive

Source: Raimi and Newell, 2014

The Raimi and Newell (2014) study makes clear that in areas where the county government collects property taxes, that was the greatest source of revenue. Similarly, in counties where property taxes weren't collected, gross production taxes collected by the state and returned to the counties proved to be the greatest source of revenue. According to the study, the major revenues associated with oil and gas production are: gross production tax (called an "impact fee" in PA), sales taxes, and property taxes (Raimi and Newell, 2014). Conversely, the largest costs associated with oil and gas production are road maintenance, county government staff salary, and sewer/water infrastructure. The study noted that sewer and water issues were most common in areas where a major population increase, caused by an inflow of production workers, occurred. As detailed below, the determinants of whether these high-production counties saw revenue increases or decreases varied significantly.

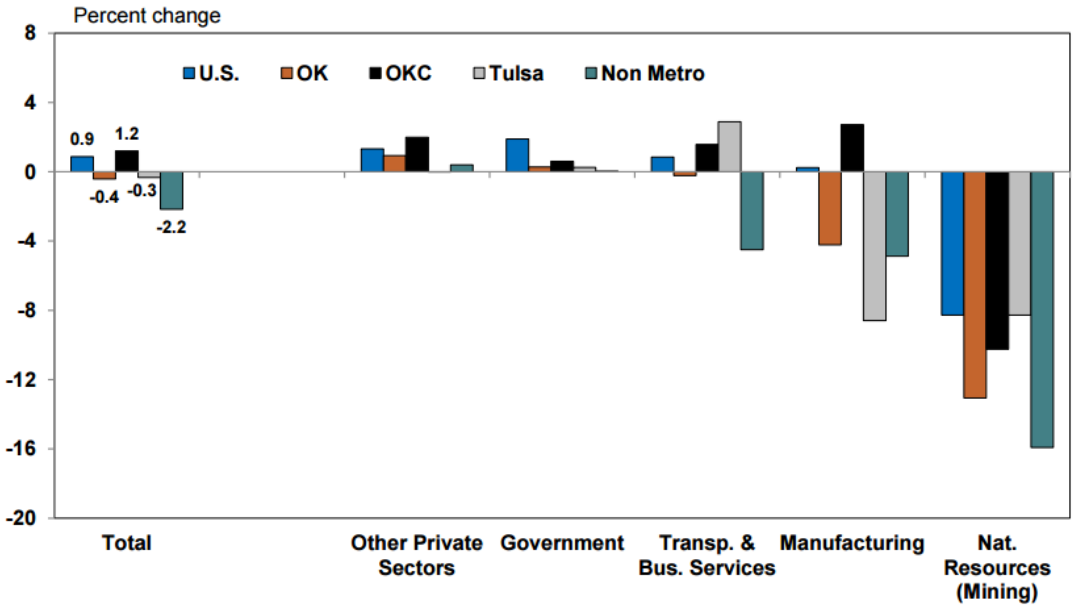
Raimi and Newell (2014) hypothesized roughly five drivers of the overall net benefit that the communities in their study experienced. Communities implemented a handful of revenue generating mechanisms, with each proving to have its own merit. They were able to determine that

the speed and size of the boom coupled with the rurality or isolation of a community became a large factor in the way it handled boomtown conditions. They also noted that the phase of development of the mining industry played a large role in how a community was affected. In summary, the study suggests that many factors determine the success of a community during times of increased oil and natural gas production. This study will attempt to provide increased quantitative measures of the factors highlighted in the study conducted by Raimi and Newell by considering retail sales tax, use tax, and a housing indicator as dependent variables, and will also focus on Oklahoma, a state left out of the Raimi and Newell analysis.

2.4 Natural Resource Curse

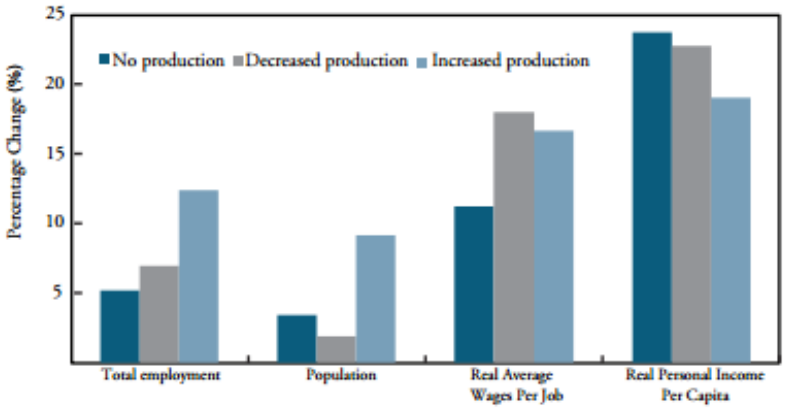
Brown (2014) defines the "natural resource curse" as a concept where a mining/extraction sector booms in an area, causing wages and cost of living to increase. Shortly after, the lower paying jobs that originally existed are gone because of low supply of labor (as workers shift to the "boom" sector). A recent paper from *The Oklahoma Economist* discusses the effects felt by local businesses during a downturn in oil and natural gas production, "As energy activity falls, so does demand for these goods and services, which can result in cutbacks among their producers" (Wilmoth, 2013). Figure 3 below also shows support for the idea of a natural resource curse. A drastic percent change in unemployment can be seen in other sectors (such as manufacturing or transportation) following the downturn of the oil and natural gas sectors in Oklahoma and several other states between December 2014 and June 2015. These other producers include local small businesses such as restaurants, hotels and grocery stores that thrived on the demand from a booming energy sector and are now hurt because of the downturn in this industry. Those businesses in turn go under and there are fewer jobs and businesses than before the boom began.

Figure 3. Oklahoma Job Growth by Industry (Dec14-Jun15)
Source: Wilkerson, 2015



Brown's study looked at the "natural resource curse" on a local level as opposed to the national level. Much like the Raimi & Newell case study above, Brown used a nine state sample from 2001 to 2011 and collected 647 non-metropolitan counties' data for his analysis. Counties were sorted into categories based on production: no production, decreased production and increased production. Dependent variables such as: employment, real wages, population and real per capita income were employed in an attempt to detect how changes in natural gas production can affect a local economy. As shown in Figure 4 below, Brown found that, on the average, local economies saw either net benefits from a boom, or no effect at all. In particular, growth rates of employment and population were significantly higher for counties with increased production – but wages/income were not necessarily higher. In either case, there was no evidence that a net decline in the local economy was a normal result of an energy boom.

Figure 4. Change in County-Level Outcomes by Production Category, 2001-2011
Source: Brown, 2014



Sources: Author's calculations using data from Bureau of Economic Analysis, REIS.

Weber (2013) provides some insight into the area of the 'natural resource curse' as well. His approach is more focused on a few states and employs spatial analytics to quantify results. Similar to Brown (2014), the study considers 362 non-metropolitan counties, across four states from 2000-2010. The elimination of metropolitan counties is done to remove potentially skewed weights on income, wages and other variables that might affect the accuracy of the model. Weber (2013) finds that an increase by 1 billion cubic feet of natural gas production translated to the creation of 18.5 'total jobs' in a given county. It was also determined, based on the spatial modeling, that elevated natural gas production in neighboring counties had little effect on the centralized county itself. It's worth noting that 7.5 of the 18.5 'total jobs' were created specifically in the mining sector. Finally, Weber determined that when a single mining job was created, the data support the fact that an additional 1.4 jobs are created in the non-mining sector. This finding suggests that the "natural resource curse" does not exist.

Conversely, a study by James and Aadland (2010) provides support for the idea that a natural resource curse exists at the county level in some states, specifically Wyoming and Maine. Their study considers county-level data and provides three reasons why micro-analysis is superior

to that at the state level. First, there are significantly more counties than states which provides a much larger sample size. Second, counties in different states are much more similar than the states themselves. Finally, state and national data are aggregated up from county level data, so micro-analysis stems from the root of the numbers reported. The study employs two-stage Generalized Least Squares (GLS) regression using income growth rate as the dependent variable and predictors like: age, education, ethnicity, income per capita and the percentage of earnings from agriculture, forestry, fishing and mining. Econometric modeling indicates that a one percent increase in earnings in the mining sector equates to a 0.02% decrease in real income per capita (James & Aadland, 2010). The results indicate that a resource curse does appear in the two state sample, but also provides evidence that such a curse does show signs of slowing down towards the end of the sample timeline, 1980 to 2005. However, the research shows the slowing might be caused by a dramatic exhaustion of resources in the 1980's (high resource dependence=negative growth rate) which limited the magnitude of the curse coefficient in later years.

2.5 Pennsylvania (Marcellus) Shale

Recently, economists at Penn State University have been conducting research on the Marcellus Shale play in Pennsylvania. A study conducted by Costanzo & Kelsey (2012) found that counties with above average oil and gas production experienced elevated sales tax revenue, higher wages, and slower declines in housing conditions. Results can be seen in the figures below. Figure 5 provides evidence of the effects energy production can have on the generation of sales tax revenue at the county level. As shown, counties with 150+ wells experience significantly elevated levels of sales taxes after 2007. Conversely, those counties with no natural gas production saw declining annual sales tax collection during the year 2004 through 2012.

Figure 5. Average County Level Annual Percent Change in Sales Tax Collections, by Marcellus Activity
Source: Costanzo & Kelsey, 2012

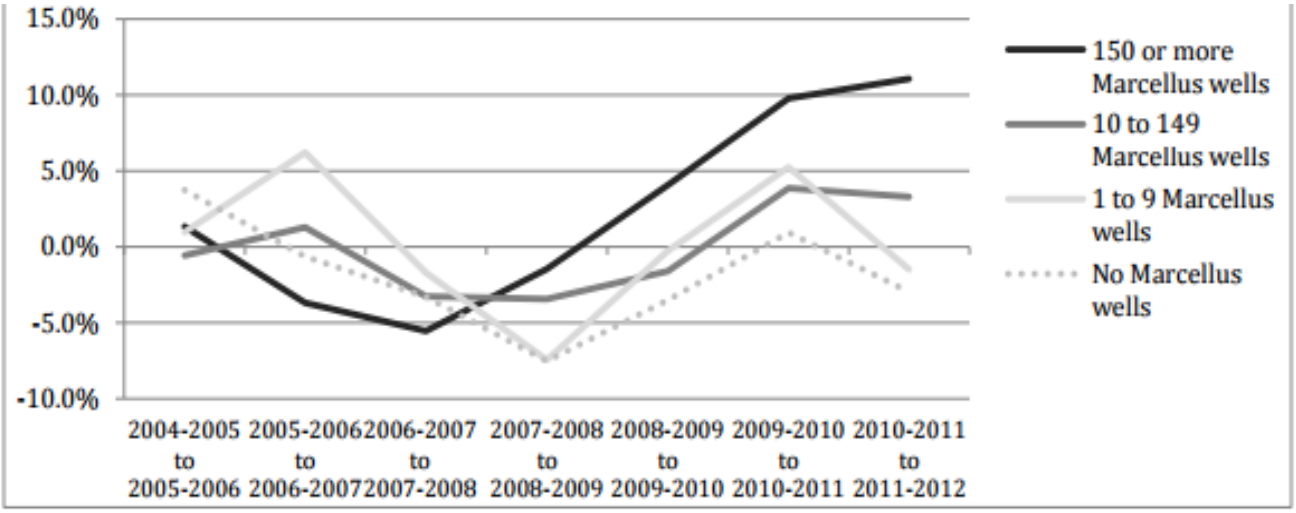
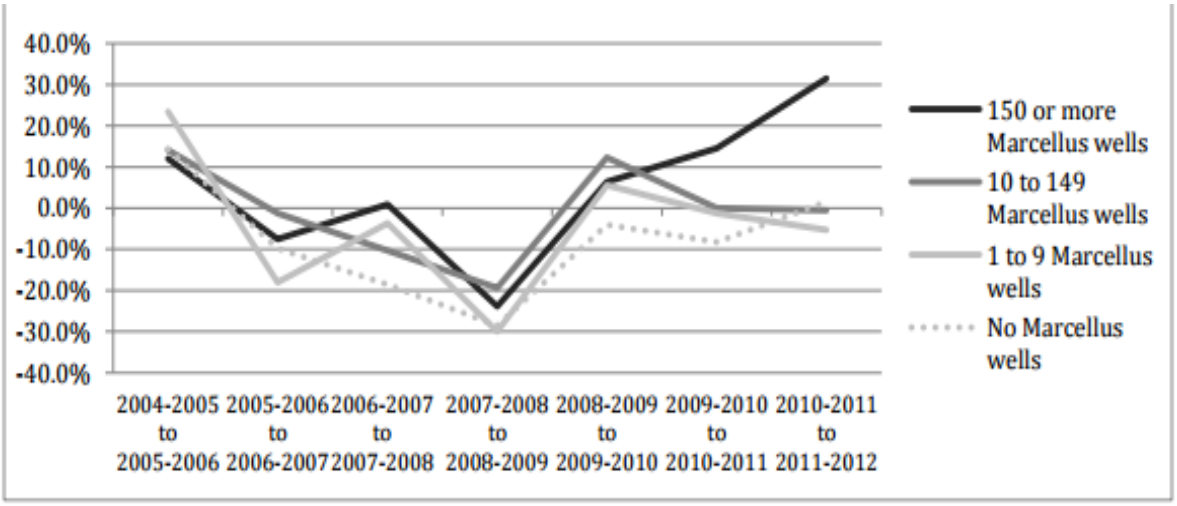


Figure 6 below provides additional support for the positive fiscal revenue effects associated with increased energy production at the county level. Costanzo & Kelsey (2012) considered the housing market as an indicator for economic viability and found the results presented below. The housing conditions were slowing throughout the state because of the recession in 2008, but those counties with energy production saw a slower rate of deterioration in their housing markets. One inconsistency noted in the project related to the variance of effects that each county experienced. Not every county with elevated production experienced the same uniform reaction to the oil and gas boom. Trends supported the previous statements about high production being related to economic growth, but a few counties in each category of production deviated from the trends. Specifically, the sales tax and income variables exhibited a wider variance. This study will remain conscious of the higher variance experienced in previous studies and will also look to confirm or provide evidence against these initial findings in other states.

Figure 6. Average County Level Percent Change in Realty Transfer Tax Collections, by Marcellus Activity
Source: Costanzo & Kelsey, 2012



2.6 Planning

Research in the area of energy economics has been a point of interest in cycles throughout U.S. history. An early paper discussed the ideas of optimal investment strategies for rural boomtowns. The study found that some communities were able to capture the benefits of a boom in the form of increased municipal services (Cummings et al. 1978). These towns were able to weather the usual negatives associated with a boom such as social disruptions, and invest in their community over the longer term. This research provided evidence on what exactly makes one community more successful at harnessing the inflow of revenue and balancing the expenses associated with this type of cycle. According to Cummings et al. it is the ability of a city planner, or equivalent, to quickly recognize a boom cycle and invest in county infrastructure before the ideal time passes. Cummings et al. (1978) discovered that most planners were investing too little, too late. One specific county from the study showed an example of a planner investing $800,000 in county infrastructure when the mathematical estimation of the necessary investment was much closer to $6 million.

Based on the past research highlighted above, there is a need to evaluate the effects of oil and natural gas production on Oklahoma counties and how they relate to the generation of tax revenue and county road expenditure. An additional study by Feyrer et al. (2015) noted that 13% of oil and natural gas production value remained within the county where it was produced and 36% remained within 100 miles of the well head. More specifically, that 13 % was seen in the form or increased pay for workers. Previous studies have shown how today's energy landscape, specifically the boomtown model, look different than it did even thirty years ago. Towns are less isolated and more densely populated, providing more people in different sectors to bear the burden of some negative side effects associated with the energy boom and bust cycle. This research has policy implications in relation to tax reform at the state level. Oklahoma faces a more difficult fiscal year when energy prices and production decrease, and understanding how those declines in production are affecting the local economies within the state is critical. There have been case studies utilizing primary data to answer questions about how local governments, and their economies, handle the boom and bust cycle of the energy sector. However, this research did not include analysis of Oklahoma and its counties. Oklahoma's primary natural gas reserves are associated with the Woodford and Anadarko natural gas plays. Previous research has considered the Marcellus shale region in the northeast United States, but there has been little done to show effects specific to Oklahoma. Additionally, no research to date has incorporated panel data or broken sales tax collections into SIC codes – both of which will be done in this paper.

This study will attempt to quantify the drivers of local sales and use tax with regards to oil and natural gas production. The results will be useful for identifying how an increase (or decrease) in oil and natural gas production might affect the revenue generated for a county. With this information, government officials might have a better idea of how their community may fare in terms of tax revenue associated with energy production. The use of specific SIC categories may also aid the selection or promotion of new businesses in the area. For example, if it is known that

restaurants are most affected by increased production, a planner might be more apt to attempt to add that type of service to the county before another. The methodology used will also allow for estimates of reduced revenue as production declines.

This research looks to generate findings that add to the body of evidence demonstrated in the articles and areas of thought discussed above. The following section will continue to build on the methods and variables used in previous studies. This study will consider Oklahoma counties alone and will quantify specific factors related to the energy industry within state lines. Additionally, the hope is for this paper to provide a way for Oklahoma government officials to estimate how changes in oil and natural gas production might affect sales and use tax as well as county road expenses. The model will also be applicable to other states with comparable revenue structures to Oklahoma, and could help to determine how the energy industry is affecting local economies.

CHAPTER III

DATA & METHODS

In an attempt to quantify the effects the oil and natural gas industries have on Oklahoma counties, county-level data will be used from the years 2003-2012. The time period selected comes at a point in Oklahoma's oil and natural gas production where the annual number of mcf ("million cubic feet" – measure for natural gas production) and barrels (measure of crude oil production) were climbing. This time frame was also the longest period for which consistent data was available, providing the maximum number of observations while still capturing specific parameters. Because of the nature of the data – a snapshot of the same elements in the same counties over a period of ten years – panel regression will be used to predict the coefficients. The advantages of this technique are discussed later in this section.

3.1 Introduction of Data

This research will implement a number of variables in an attempt to capture the effects of oil and natural gas production on several county-level economic indicators. In particular, the selected dependent variables for this study are total sales taxes, retail sales taxes (breakouts by specific SIC codes), use taxes, and county road expenditure. The study will use measures of annual production *value* for oil and gas by multiplying the volume by an annual futures market price from the Energy Information Administration. These measures are reported annually for each county by the Oklahoma Corporation Commission. The data will come from the years 2003-2012 and should accurately represent a time when many Oklahoma counties are experiencing boomtown conditions.

Each variable is collected at the county level for a given year. The tax figures, from the Oklahoma Tax Commission, are a representation of the taxes returned to the county, not a summary of city collections within a county. This study will utilize the tax collections to monitor and potentially isolate specific areas within the retail industry that are affected by oil and natural gas production. Sales tax collections in general will be used to understand the overall effects of energy production on commerce in Oklahoma counties, but the specific scope of this paper is to understand how specific sectors (SIC codes) react to oil and natural gas production. The main difference here is that sales tax collections encompass any transactions in the state whereas retail tax collections only focus on businesses in the retail sector. County road expenses will also be used to determine how energy production affects some of the major costs incurred at the local level.

The dependent variables were selected for the value of information provided when considering their correlation with the independent variables. After regression analysis is complete, the variables will indicate how a unit change in an independent variable, crude oil production value for example, will elicit a specific unit change in a dependent variable, like sales tax collections. Table 2 below provides a summary of both the dependent and independent variables used along with their respective minimum, maximum, mean and standard deviation within the dataset. Table 2 also shows evidence of the variance across counties in each of the variables used for estimation. Note, for example, that some counties did not collect any use tax in 2003. Unfortunately, the reporting of use tax collections is not a mainstream practice in Oklahoma, so holes exist in the dataset that are ultimately assigned a value of "0" after the natural log transformation. Similarly, there was wide variation in sales taxes collected as shown by the standard deviation. The models outlined later will provide some insight about how certain dependent variables are affected by the energy related variables. A comprehensive data table can be found in the Appendix. The data represented in the table is provided by the sources listed in Table 3 from 2003-2012 on a county level basis.

With this information, modeling efforts can construct elasticities for variables receiving natural log treatment – or estimators of how changing an independent variable by one percent (1%) causes a specified dependent variable to respond by a given number percentage. The dependent variables listed above are chosen for specific seasons. Sales tax is directly related to the amount of spending at the county level on goods and services. This measure is a reflection of the amount of economic activity occurring in the county. Increased economic activity can be shown through increased spending on goods such as food, clothing, or building materials as well as tax at fuel stores.

Additionally, use tax can provide a measure of economic activity at the county level specific to the oil and gas sector. According to the Oklahoma Tax Commission, "use tax must be paid on tangible personal property purchased and brought into this state for storage, use or consumption". This scenario is common in Oklahoma as many companies within the oil and natural gas sector aren't necessarily based in the state. This statistic may be even more significant for new well completions within a county. Drilling and finishing a well are very costly, and if the companies involved in this service are out of state, the model should show a correlation. Again, this tax figure is used similarly to sales tax in an attempt to capture economic activity at the county level. However, sales tax is defined by the Oklahoma Tax Commission as, "a tax charged and collected on all transfers of title or possession of tangible personal property for valuable consideration that occur within the state".

County road expenses are a particularly interesting factor under consideration in this study. For analysis purposes, the annual county level expenses from the Highway fund are used as a measure of infrastructure costs with this measure. Lansford (2011) discusses the breakdown of the funding for county roads and bridges in Oklahoma. Most of the funding comes from fuel taxes, gross production of energy commodities, and vehicle license and registration. In 2010, gross production taxes were the second largest contributor to the county road fund, behind vehicle taxes

& licenses. About 10% of the gross production tax is returned to the counties and nearly 27% of the vehicle taxes and licenses are returned. This analysis will attempt to determine how changes in oil and natural gas activity relate to county road expenditures.

The list of independent variables will include: crude oil production value (bbls/county/yr*price), natural gas production value (mcf/county/yr*price), oil and natural gas well completions, sales tax rate, median household income, unemployment rate, poverty rate, population, a spatial variable controlling for micropolitan city effects, and a spatial variable for energy production in surrounding counties. Each of these variables is collected annually from 2003-2012 at the county level. Independent variables have been selected to control for factors that may impact the dependent variables. It is expected that these economic factors will affect the amount of retail sales tax, use tax, and county road expenses in addition to the effects provided by oil and natural gas production. In order to accurately quantify the effects of oil and natural gas, and only oil and natural gas, the regression model must include control variables.

As shown in Table 2, many of the data points had a value of "0" for a given county in a given year. When those data points received the natural log treatment the result was an undefined observation. The statistical software would attempt to throw those points out of the model yielding inaccurate results, so they were replaced with a "0" value for no production. Table 2 presents a summary of the independent variables that will be used in the regression model. However, the full dataset is provided in the appendix. The data collected to be used as independent variables comes from multiple sources including the Oklahoma Corporation Commission (oil and gas production data), the Census Bureau (population, income, unemployment) and the Energy Information Administration (EIA) as noted in Table 3.

Table 2. Summary Data from 2010				
	Minimum	Maximum	Mean	Std.Dev.
Sales	0	275,894,745.00	11,704,072.00	37,738,220.00
Use	0	5,719,522.00	235,911.00	654,461.20
TotTaxes	169,447.00	275,894,745.00	11,939,983.00	38,075,536.00
CRE	1,219,197.00	13,898,184.00	4,567,464.80	2,251,360.50
SIC52	0	29,578,705.00	1,117,914.00	3,924,645.00
SIC53	0	67,863,826.00	3,694,846.00	9,792,187.00
SIC54	0	29,015,557.00	1,470,991.00	4,086,639.00
SIC55	0	12,218,397.00	523,525.70	1,591,687.00
SIC56	0	15,508,022.00	525,722.40	2,156,604.00
SIC57	0	27,554,432.00	882,257.60	3,676,831.00
SIC58	0	53,356,361.00	2,111,104.00	7,170,620.00
SIC59	0	40,799,445.00	1,377,712.00	5,472,880.00
OilValue	0	524,437,414.00	61,218,827.60	95,416,140.90
GasValue	0	659,265,761.00	95,339,478.90	143,931,600.00
TotValue	0	792,400,882.00	156,558,306.50	191,447,060.30
OilSpace	0	226,678,000.00	63,686,515.90	58,251,573.10
GasSpace	550,000.00	303,333,333.00	94,646,133.90	78,585,390.90
TotSpace	591,727.00	415,166,667.00	158,332,650.00	105,338,507.00
OilComp	0	160.00	26.00	31.60
GasComp	0	184.00	16.00	26.70
TotComp	0	184.00	42.00	42.60
MHI	28,914.00	57,018.00	39,024.90	6,369.90
Population	2,456.00	721,074.00	48,822.00	107,041.40
Unemploy	3.50	10.80	6.70	1.80
Poverty	9.30	27.30	17.90	4.30

Two additional types of variables were added in an attempt to measure spatial and regional impacts. The $lnOilSpatial_{it}$ *and* $lnGasSpatial_{it}$ variables were added in an attempt to capture the effects of oil and natural gas production in surrounding counties on a specific county. Essentially, the average amount of oil and natural gas production was calculated using data from counties that border the county in question. This variable was also given the natural log treatment because of size and provides an elasticity for measuring how a one percent (1%) change in the production in surrounding counties might affect the generation of retail sales taxes or county road expenses in the county in question. Secondly, a MSA variable (Micropolitan Statistical Area) was included to capture the regional effects that different size cities have on the generation of tax collections. Regional hubs may attract more business because of their size as opposed to strictly based on energy production. The MSA variable will help to account for the effects caused by this

regional theory. This variable was calculated based on the population of the major city within micropolitan counties in Oklahoma. Counties without a micropolitan designation were given a "0" and counties with micropolitan designations were given the value of the major cities population. This variable should control for the pull a larger city has on the collection of taxes and expense on county roads.

For a visual representation of county level oil and natural gas production, the following maps were generated using data from the Oklahoma Corporation Commission. Figure 7 reflects the average oil production (barrels) from 2003-2012. Counties colored dark red experienced the most production and counties with lighter colors experienced little to no oil production volume. Likewise, Figure 8 represents those same factors for natural gas production volume. As shown, the concentration of oil production is primarily in the western half of the state, while natural gas production is more widespread throughout the state.

Figure 7. Avg. Oil Production Volume (2003-2012), *Oklahoma Corporation Commission*

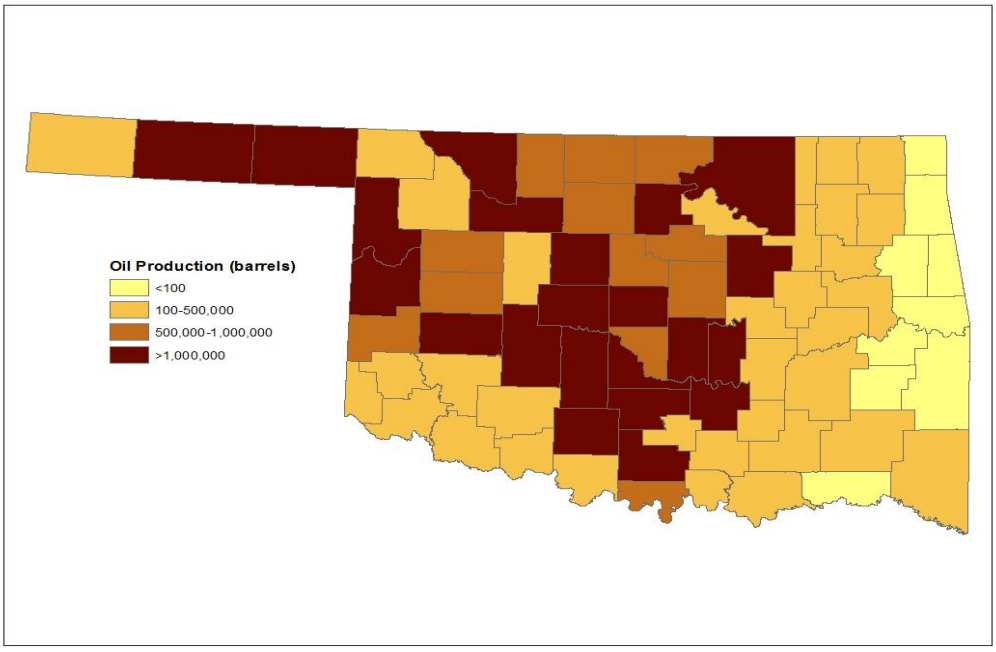
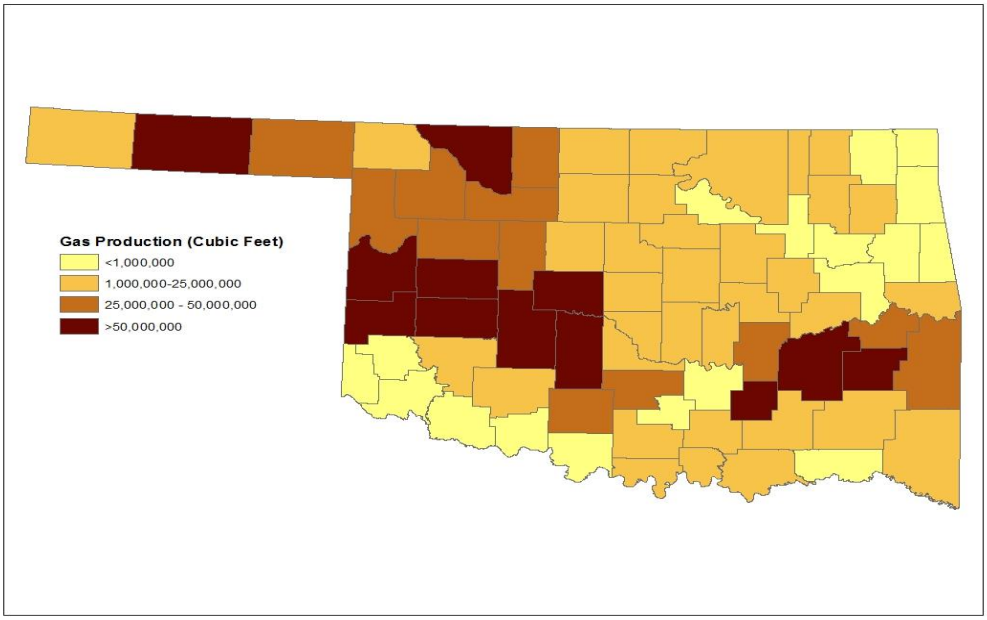


Figure 8. Avg. Natural Gas Production Volume (2003-2012), *Oklahoma Corporation Commission*



3.2 Introduction to Panel Data

Panel regression provides a look at the elements of a study over a specific time period. It allows for the researcher to isolate fixed effects, in this case a year or county, by incorporating them as individual dummy variables. When the regression analysis controls for these fixed effects, the estimated parameters are free of county-specific or year-specific factors that may affect the results. For example, consider panel data for 77 Oklahoma counties from the years 2001 to 2010 with a dependent variable of county road expense and an independent variable of natural gas production. By including fixed effect variables for the county and year, the regression will account for both an aggregate time trend and specific county-level impacts (for example, the typical amount of road travel in that county) on county road expenditures, for example. The fixed effect components essentially eliminate the effect of the year and county on each observation, allowing for isolation of the impact of the variables of interest – namely, specific measures of oil and gas production. By including the control variables outlined above, the regression model will predict a more accurate estimator for the effects that oil and natural gas production have on the generation of sales tax, retail sales tax, use tax, and specific SIC codes.

Table 3. Data Sources by Variable	
Variable	Source
Retail Sales Taxes	Oklahoma Tax Commission
Use Taxes	Oklahoma Tax Commission
County Road Expense	State Auditor/Inspector
SIC52	Oklahoma Tax Commission
SIC53	Oklahoma Tax Commission
SIC54	Oklahoma Tax Commission
SIC55	Oklahoma Tax Commission
SIC56	Oklahoma Tax Commission
SIC57	Oklahoma Tax Commission
SIC58	Oklahoma Tax Commission
SIC59	Oklahoma Tax Commission
Oil/Gas Production Volume	Oklahoma Corporation Commission
Oil/Gas Market Prices	Energy Information Administration
Oil/Gas Well Completions	Oklahoma Corporation Commission
Oil/Gas Spatial Variable	Generated from OCC volume data
Median Household Income	U.S. Census - Small Area Income & Poverty Estimates (SAIPE)
Population	U.S. Census - Population Estimate
Unemployment Rate	Bureau of Labor Statistics - Local Area Unemployment Statistics (LAUS)
Poverty Rate	U.S. Census - Small Area Income & Poverty Estimates (SAIPE)

3.3 Equations

Below is an outline of the model equations used. Equation 1 represents the effects of the independent variables on sales tax collections at the county level. In order to ensure normal distribution, and for ease of interpretation, several variables have been converted to logarithmic form before proceeding with modeling.

(1) $$lnSales_{it} = \beta_0 + \beta_1 lnOilValue_{it} + \beta_2 lnGasValue_{it} + \beta_3 OilComp_{it} + \beta_4 GasComp_{it} + \beta_5 Unem_{it} + \beta_6 lnPopulation_{it} + \beta_7 lnMHI_{it} + \beta_8 Poverty_{it} + \beta_9 lnOilSpatial_{it} + \beta_{10} lnGasSpatial_{it} + \beta_{11} TaxRate + \beta_{12} lnMSA + \alpha_i + \delta_t + \varepsilon_{it}$$

In equation (1) $lnSales_{it}$ is the dependent variable and represents the natural log of annual sales tax collections for county *i* in the period *t* in Oklahoma. Additionally, β_0 serves as the intercept estimator, α_i serves as the county fixed effect estimator, δ_t serves as the year fixed effect

estimator, and ε_{it} serves as the estimator for the error term. The independent variables that are of primary interest include: $lnOilValue_{it}$ represents oil production value (volume*price), $lnGasValue_{it}$ represents natural gas production value (volume*price), $OilComp_{it}$ represents the number of oil well completions, and $GasComp_{it}$ represents the number of natural gas well completions. Additionally, spatial variables are included ($lnOilSpatial_{it}$ and $lnGasSpatial_{it}$) that capture the average volume of production in counties surrounding each county observation (spatial weights calculated using a configuration matrix). Control variables used include: $Unem_{it}$ represents the unemployment rate, $lnPopulation_{it}$ represents the population, $lnMHI_{it}$ represents the median household income, and $Poverty_{it}$ represents the poverty rate. The $TaxRate$ variable was included to capture the differences in county-level tax rates that are applied to the collections sales and use taxes. Finally, each dependent variable (sales taxes, SIC52, county road expense, etc.) was run with and without the use of the MSA variable discussed earlier (used to account for regional micropolitan effects). Each variable represents a county-level figure on an annual basis. Additional equations are included below for each of the remaining dependent variables.

(2) $$lnUse_{it} = \beta_0 + \beta_1 lnOilValue_{it} + \beta_2 lnGasValue_{it} + \beta_3 OilComp_{it} + \beta_4 GasComp_{it} + \beta_5 Unem_{it} + \beta_6 lnPopulation_{it} + \beta_7 lnMHI_{it} + \beta_8 Poverty_{it} + \beta_9 lnOilSpatial_{it} + \beta_{10} lnGasSpatial_{it} + \beta_{11} TaxRate + \beta_{12} lnMSA + \alpha_i + \delta_t + \varepsilon_{it}$$

(3) $$lnTotalTaxes_{it} = \beta_0 + \beta_1 lnOilValue_{it} + \beta_2 lnGasValue_{it} + \beta_3 OilComp_{it} + \beta_4 GasComp_{it} + \beta_5 Unem_{it} + \beta_6 lnPopulation_{it} + \beta_7 lnMHI_{it} + \beta_8 Poverty_{it} + \beta_9 lnOilSpatial_{it} + \beta_{10} lnGasSpatial_{it} + \beta_{11} TaxRate + \beta_{12} lnMSA + \alpha_i + \delta_t + \varepsilon_{it})$$

(4) $$lnCountyRoadExpense_{it} = \beta_0 + \beta_1 lnOilValue_{it} + \beta_2 lnGasValue_{it} + \beta_3 OilComp_{it} + \beta_4 GasComp_{it} + \beta_5 Unem_{it} + \beta_6 lnPopulation_{it} + \beta_7 lnMHI_{it} + \beta_8 Poverty_{it} + \beta_9 lnOilSpatial_{it} + \beta_{10} lnGasSpatial_{it} + \beta_{11} TaxRate + \beta_{12} lnMSA + \alpha_i + \delta_t + \varepsilon_{it}$$

(5) $$lnSIC_{it} = \beta_0 + \beta_1 lnOilValue_{it} + \beta_2 lnGasValue_{it} + \beta_3 OilComp_{it} + \beta_4 GasComp_{it} + \beta_5 Unem_{it} + \beta_6 lnPopulation_{it} + \beta_7 lnMHI_{it} + \beta_8 Poverty_{it} + \beta_9 lnOilSpatial_{it} + \beta_{10} lnGasSpatial_{it} + \beta_{11} TaxRate + \beta_{12} lnMSA + \alpha_i + \delta_t + \varepsilon_{it}$$

Equations 2-5 above represent the models for determining the effects of the independent variables on $lnUse_{it}$ (use tax collections), $lnTotalTaxes_{it}$ (use taxes + sales taxes), $lnCountyRoadExpense_{it}$ (county road expenses), and $lnSIC_{it}$ (for individual SIC codes 52-59). Each SIC code will have its own equation to quantify the effects that each individual sector of retail experiences when oil and natural gas production are elevated.

In preparation for panel regression modeling, the data was manipulated to provide manageable and uniform observations. For example, variables with large numbers such as: county road expense, tax collections, population, etc. were treated with a natural log transformation. This gives these variables a normal distribution. The benefits of this transformation also allow for the interpretation of results as elasticities. The results section will include examples and interpretations of the resulting parameters. Additionally, four counties were eliminated due to lack of data or lack of fit with the population. Tulsa, Oklahoma and Comanche Counties were eliminated due to the large metropolitan area they cover (each contains a Metropolitan Statistical Area with a population greater than 100,000). LeFlore County was eliminated due to lack of oil and natural gas production data. These counties are not part of the scope of this paper and were eliminated because of these facts.

Finally, a variable was added using the summation of total sales tax collections and total use tax collections in an attempt to capture the total generation of transaction tax collections at the county level. The variable is included in Table 4 and Table 5 as $lnTaxes$. The model showed strong significance between natural gas well completions and the collections of both use and sales taxes.

Based on Table 5, increasing natural gas well completions by 100 would yield a 0.11% increase in total tax collections at the county level – a significant result.

After the preparation of each variable, the panel regression was run using STATA and the 'xtreg' command. Initial assumption testing revealed issues with heteroscedasticity, so the robust command was added to the model. Additional testing on autocorrelation between variables yielded satisfactory results (as shown in Appendix C) providing support that independent variables are not significantly related. The models were evaluated and results transferred to tables presented in the results section below and in the appendix of this paper.

CHAPTER IV

RESULTS

The following section of this paper will discuss the results from multiple models in an effort to appropriately explain the effects of oil and natural gas production on economic measures in Oklahoma counties. The tables included in this section present the findings from panel regression conducted on the variables outlined in the materials and methods section of this paper. Additionally, the following chapter will compare the results of two models: one model utilizing a variable attempting to account for regional and micropolitan effects on the dependent variables (MSA) and the other without the regional variable. The final chapter of this paper will discuss conclusions from the models and attempt to answer the questions posed in previous chapters.

The modeling used in this research has developed over the course of the project and the final result should provide a solid beginning to further analysis of oil and natural gas production and its effects on counties in Oklahoma. The first model results to be discussed are shown in Table 4 below. This model employed sales tax collections and did not include the Micropolitan Statistical Area (MSA) variable. Table 4 shows significant parameter estimates for several oil and natural gas independent variables as well as economic control variables. Results from this model (for variables in logarithmic form) can be interpreted on a percent (%) change basis much like an elasticity. For example, a one percent (1%) increase in natural gas value would cause a 0.011% increase in the collections of SIC55 (Gasoline Stores) at the county level.

Again, because of the nature of the model, a one percent (1%) decrease in that same metric would cause a drop in the collections of SIC55 by 0.011%. The implications of the manner in which these results are interpreted will be discussed more in the following chapter of this paper.

The first row of Table 4 below shows the results for the model using sales taxes as the dependent variable. The table shows that only median household income and population are significantly associated with sales tax collections at the 95% confidence level. The table also provide the R^2 value which indicates that the model explains nearly 90% of all variation in sales tax collections. The next model (row 2) in Table 4 employs use tax collections as the dependent variable. This model yields significant results for the gas value and median household income variables (90% confidence level). However, the R^2 value (0.007) for the model implies that its predictors do not capture much of the variation in use tax over the years or across counties. Thus, the counterintuitive finding that an increase in the value of natural gas value would cause use tax collections to decrease comes from a poorly specified model. It would be expected that an increase in natural gas value would generate more use tax collections for a given county. Additional significant results are outlined in the following paragraphs.

Table 4 also includes results for models focused on specific SIC codes. Median household income and population effects were significant in models for retail sales collections, use tax collections and SIC codes 54-59. It should also be noted that each of these parameters yielded a positive coefficient (and typically close to a value of 1.0) indicating a positive correlation between the dependent and independent variables. This is essentially saying that if median household income or population increases at the county level, citizens should expect to see an increase in retail sales tax collections, use tax collections and the specific areas of retail pertaining to SIC codes 54-59 (food stores, automotive dealers, apparel stores, equipment stores, eating & drinking places, and miscellaneous retail). This is an expected result and gives some confidence that the model is behaving according to economic theory.

This research is most interested in the effects of oil and natural gas measurements on the economic measurements used as dependent variables. The results in Table 4 show that the value of oil production in a county has a significant effect on collections by SIC 57 (furniture stores). Results also support the idea that increased production in surrounding counties ($lnOilSpatial_{it}$ $lnGasSpatial_{it}$) will boost the miscellaneous retail (SIC59) and eating & drinking places (SIC58) retail collections, respectively. Additionally, oil and natural gas well completions are shown to have significant, positive impacts on several dependent variables. In fact, natural gas completions seem to have the most significant effect on the dependent variables while the value of production does not show much significance. Some noteworthy findings are that food stores (SIC 54) see a significant, positive relationship with oil well completions, but not gas well completions. In fact, Table 4 does not show any dependent variable outside of county road expenses that receives a significant, positive relationship for both oil and natural gas well completions – only one or the other. The conclusions drawn from this initial model will be discussed and compared to the next model in the final chapter of this paper.

Moving on to the second model, an increased number of significant results can be found when including the regional/micropolitan variable in the analysis. Table 5 indicates the comprehensive list of parameter estimates from the final model. In terms of economic control variables, median household income and population are again the most significant, and represent a significant, positive relationship between the average income and population of a county and the amount of retail tax collections and road expenses it experiences. Oil and natural gas completions again show significance for different areas of tax collections; however, neither returned a significant parameter estimate when county road expense is the dependent variable. The MSA parameter was significant for total sales tax collections, SIC 52 (building materials/hardware), SIC 55 (automotive stores/gas stations), SIC 58 (eating/drinking places) and SIC 59 (miscellaneous retail). The statistical significance associated with inclusion of the MSA variable suggests that it is

an important contributor to the overall model and that the results when it is omitted (Table 4) may suffer from omitted variable bias.

Interestingly enough, oil value and natural gas value at the county level were marginally significant in this model. The increase of oil value for a given county was shown to only have a significant effect on home furniture, furnishings and equipment stores (SIC57). Likewise, natural gas value within a county only had a significant effect on use tax collections (although negative) and automotive dealers/gas stations (SIC55). The oil and natural gas spatial variables (accounting for production in neighboring counties) was again significant for SIC 59 (miscellaneous retail) for oil and SIC 58 (eating/drinking places) for natural gas. One additional similarity between the models is the strong negative significance of the tax rate variable on SIC 59. Overall, the results from Table 5 suggest that county population and income remain important determinants for most of the dependent variables, that including the MSA variable was an important addition in some instances, and that oil and gas completions are generally bigger factors than overall oil and gas value. Further discussion of these findings will be introduced in the pages that follow this chapter.

Additional models not included in the results section were conducted using the total amount of oil and natural gas activity as opposed to broken down into oil and natural gas. For example, oil completions and natural gas well completions were summed to get "total well completions" and oil value was added to natural gas value to get "total value" at the county level. One model was run using the MSA variable discussed above and one was not – exactly like the models shown in Table 4 and Table 5. The results were not significantly different than what is shown in the tables below. In fact, the model using totals tended to water down the effects of one specific form of energy production. For example, in the original model gas value's effect on SIC 55 was 95% significant, but the joint model yielded only a 90% significance on the effect of oil and natural gas value summed together. This was a common finding, so the model was not included in this research paper.

One additional result to discuss is the elevated intercept for the model using county road expenses as a dependent variable. At first this result seems difficult to explain (unfortunately it's the only significant parameter in that particular model). However, this provides support for the idea discussed in the conclusions section that county officials spend every bit of their allotted road funding – there is minimal to no effect caused by oil and gas production on how much the county will spend in a year. It is also important to note the time lag in energy production and the time it takes for a county to receive funding from the state of Oklahoma. The models show support for the idea that county road expenses are equal to the amount of revenue received by a county.

Table 4. Model results without MSA variable (including tax rate variable)

Dep. Var.	Intercept	Tax Rate	lnOilValue	lnOilSpatial	OilComp	lnGasValue	lnGasSpatial	GasComp	lnMHI	lnPopulation	Unemployment	Poverty	R^2
lnSales	0.804	(0.775)	0.003	(0.001)	(0.003)	(0.001)	0.026	*0.039**	**0.306****	**1.013****	(0.005)	0.004	0.895
lnUse	(50.718)	11.081	0.043	0.029	0.677	*(0.050)**	0.358	0.338	*5.682**	(0.804)	(0.053)	0.072	0.007
lnTaxes (Sales+Use)	1.530	0.367	0.003	(0.001)	0.039	(0.002)	0.012	**0.094****	**0.459****	**0.819****	**(0.016)****	(0.000)	0.894
lnCRExpense	**36.900****	3.157	0.024	(0.082)	*0.127**	0.033	0.020	*0.090**	(1.355)	(0.874)	0.026	0.036	0.016
lnSIC52 Hardware	(2.795)	(0.746)	0.003	(0.001)	0.057	(0.006)	0.049	0.062	0.345	1.041	*(0.033)**	(0.001)	0.857
lnSIC53 General	1.766	(3.712)	0.004	(0.012)	(0.011)	(0.007)	0.025	(0.068)	0.689	0.362	0.004	*0.017**	0.727
lnSIC54 Food	5.793	(0.459)	(0.000)	(0.005)	**0.093****	0.005	(0.009)	0.043	**0.941****	(0.225)	(0.019)	0.010	0.409
lnSIC55 Fuel	(0.860)	(0.041)	0.006	(0.014)	0.106	**0.011****	0.040	(0.051)	(0.027)	**1.166****	*0.050**	0.011	0.751
lnSIC56 Apparel	(21.810)	(1.783)	0.000	0.013	(0.241)	0.005	0.081	0.011	**1.187****	1.792	(0.037)	0.001	0.683
lnSIC57 Furniture	(6.618)	(2.606)	*0.010**	0.009	0.023	0.000	(0.003)	*0.098**	**0.783****	**0.962****	(0.014)	0.002	0.827
lnSIC58 Eating/Drinking	1.384	(1.037)	0.002	0.004	(0.050)	(0.002)	**0.062****	0.027	(0.064)	**1.076****	(0.015)	0.002	0.901
lnSIC59 Misc. Retail	4.292	**(4.779)****	0.002	**0.015****	(0.062)	0.006	0.036	0.109	(0.389)	**1.097****	0.004	*(0.012)**	0.852

Bold denote 95% Significance** *Italics* denote 90% Significance* (number) denotes a negative parameter estimate

Table 5. Model results with MSA variable (including tax rate variable and MSA variable)

Dep. Var.	Intercept	Tax Rate	lnMSA	lnOilValue	lnOilSpatial	OilComp	lnGasValue	lnGasSpatial	GasComp	lnMHI	lnPopulation	Unemployment	Poverty	R^2
lnSales	1.552	(0.666)	**0.380****	0.002	(0.001)	0.014	(0.001)	0.025	**0.057****	*0.264**	**0.906****	(0.004)	0.004	0.650
lnUse	(47.271)	11.582	1.746	0.041	0.029	0.752	*(0.049)**	0.352	0.423	*5.488**	(1.295)	(0.050)	0.071	0.017
lnTaxes (Sales+Use)	2.257	0.472	**0.368****	0.003	(0.001)	0.055	(0.002)	0.011	**0.111****	*0.418**	**0.715****	**(0.015)****	(0.000)	0.611
lnCRExpense	**36.678****	3.124	(0.112)	0.025	(0.082)	0.123	0.033	0.021	0.085	(1.342)	(0.842)	0.026	0.037	0.020
lnSIC52 Hardware	(1.513)	(0.560)	**0.649****	0.002	(0.001)	0.084	(0.006)	0.046	*0.094**	0.273	0.858	*(0.032)**	(0.001)	0.546
lnSIC53 General	2.597	(3.591)	0.421	0.003	(0.012)	0.006	(0.006)	0.023	(0.048)	0.642	0.244	0.005	*0.017**	0.344
lnSIC54 Food	5.833	(0.453)	0.020	(0.000)	(0.005)	**0.094****	0.005	(0.009)	0.045	**0.939****	(0.230)	(0.019)	0.010	0.284
lnSIC55 Fuel	(0.038)	0.078	**0.417****	0.006	(0.014)	0.124	**0.011****	0.038	(0.031)	(0.074)	**1.049****	*0.050**	0.011	0.573
lnSIC56 Apparel	(21.991)	(1.809)	(0.092)	0.000	0.013	(0.245)	0.005	0.081	0.007	**1.197****	1.817	(0.038)	0.001	0.577
lnSIC57 Furniture	(6.144)	(2.537)	0.240	*0.009**	0.009	0.033	0.000	(0.004)	*0.110**	**0.757****	*0.894**	(0.013)	0.002	0.758
lnSIC58 Eating/Drinking	2.244	(0.912)	**0.436****	0.002	0.004	(0.032)	(0.002)	**0.060****	*0.048**	(0.112)	**0.934****	(0.014)	0.002	0.601
lnSIC59 Misc. Retail	5.172	**(4.652)****	**0.446****	0.002	**0.016****	(0.043)	0.007	0.034	*0.130**	(0.438)	**0.972***	0.005	*(0.012)**	0.666

Bold denotes 95% Significance** *Italics* denotes 90% Significance* (number) denotes a negative parameter estimate

CHAPTER V

CONCLUSIONS

This research was able to yield significant models and results that show support for the notion that oil and natural gas production *does* have a significant, positive relationship with certain retail activity. However, this relationship is not robust and only appears in a few of the dependent retail variables used. Interestingly enough, natural gas variables made more significant contributions to the group of independent variables than did oil production variables. One specific area of interest is in the completion of natural gas wells and how significant those estimates were when predicting things such as total sales tax collections and sales at eating/drinking places, etc.

The results from the panel regression model in the previous chapter suggest that oil and natural gas value have only minimal significance to county-level retail sales taxes collected. Alternatively, well completions (particularly natural gas) were significantly positive for four of the eight individual retail classifications. Retail sales taxes, hardware stores, furniture stores, and eating/drinking places all appear to benefit from increased natural gas well completions. This research is timely given the current conditions and those specific findings. Today, Oklahoma is experiencing slowed oil and natural gas production due to the low prices of the commodities at the marketplace. The results that specifically deal with well completions would suggest that Oklahoma counties should expect to see a drop in retail sales tax collections, and businesses within the eating/drinking, hardware, and furniture sectors should expect to see the same.

Depending on how a person views the research conducted, it can be argued that there is support for the idea that oil and natural gas production value, well completions, and production value in surrounding counties has little effect on the amount of sales tax, use tax, and county road expenses generated in a specific county. Significant relationships were found between spatial effects of oil production and miscellaneous retail, oil well completions and food stores, the value of natural gas production and gasoline stores, and the spatial effect of natural gas production on eating/drinking places. However, these results seem to be few and far between. Additionally, significant results among control variables such as median household income, population and unemployment were present but not strongly represented in every model. Some parameter estimates are negative, like the effect of population on sales tax collections at food stores, which is counterintuitive. However, there may be some rationale behind some of these unexpected results.

The generation of use taxes for a given county is a process that doesn't seem as clear cut as the generation of sales taxes based on the self-reporting nature of use tax collections as well as the lack of reporting required by certain counties within the state. Because of the nature of this collection process, finding better independent variables to explain the relationship of oil and gas might be difficult. Similarly, counties generally spend as much of their allotted road funding as possible. There is a lack of unpredictability with the expense used each year to repair roads and infrastructure at the county level. For that reason, it is again difficult to find variables that accurately model the relationship between roads and oil and natural gas production. Adding a variable about the miles roads in a county or considering specific roads and their costs might be a beneficial addition. When considering specific SIC codes, the "general" and "food store" categories yielded less than ideal models for predicting relationships with oil and natural gas production. Much can be learned from the four models listed that did not seem to appropriately capture the relationships between oil, natural gas, and the selected dependent variables. Future research should consider different sourcing for use tax and county road expense data and might consider alternative measures

of energy production (wind, for example) to better quantify this relationship that remains unsolved. One specific area might be in splitting the difference between primarily natural gas wells and natural gas production as a by-product of oil production. This suggests a deeper look into the production of natural gas specifically and a better understanding of the production process is necessary. It may be beneficial for future researchers to specifically consider the effects of natural gas on Oklahoma counties.

Another indicator of economic viability is housing markets. Costanzo and Kelsey (2012) found that realty tax (a measure of the housing market) decreased much less in counties with increased oil and gas production. Although not explicitly modeled in this study, the possibility of extending the approach taken here to assess property taxes is an avenue for future research – fortunately Oklahoma collects the realty transfer tax in the form of a stamp on housing transactions. Future studies could evaluate the effects of the oil and gas sector on property taxes in Oklahoma counties. Property taxes serve as a gauge for the condition of the housing market in local economies. The sign of the relationships between the oil and natural gas measures used and property tax collections will provide evidence on whether oil and gas activity are viewed as contributors to or detractors of property valuations.

Ultimately, this research helped to uncover relationships between the energy sector and various categories of retail sales tax collections in Oklahoma. Without the significant production of oil and natural gas, the state faces difficult times as are currently being experienced. Direct relationships detailed between energy production and retail sales tax collections (for specific SIC codes) suggest that some counties may indeed see decreasing sales tax revenue in a particular category as oil activity drops. The state needs energy production and this research shows support for the specific areas where Oklahoma counties gain value from the existence of oil and natural gas production.

REFERENCES

Blatt, D. 2012. "Unnecessary and Unaffordable: The Case of Curbing Oklahoma's Oil and Gas Tax Breaks". *Oklahoma Policy Institute Issue Brief*, October.

Brown, J.P. 2014. "Production of Natural Gas from Shale in Local Economies: A Resource Blessing or Curse?" *Federal Reserve Bank of Kansas City Economic Review* 99:119-147.

Burnett, J. W., J. G. Weber. 2014. "Is the Natural Gas Revolution all it's Fracked Up to Be for Local Economies?" *Choices* 29(4):1-5.

Costanzo, C., T. W. Kelsey. 2012. "Marcellus Shale and Local Collection of State Taxes: What the 2011 Pennsylvania Tax Data Say". Pennsylvania State University Center for Economic and Community Development, March.

Costanzo, C., T. W. Kelsey. 2013. "Marcellus Shale and Local Collection of State Taxes: What the 2012 Pennsylvania Tax Data Say". Pennsylvania State University Center for Economic and Community Development, November.

Cummings, R. G., W. D. Schulze. 1978. "Optimal Investment Strategy for Boomtowns: A Theoretical Analysis". *American Economic Review* 68:374-385.

Cummings, R. G., W. D. Schulze, and A. F. Mehr. 1978. "Optimal Municipal Investment in Boomtowns: An Empirical Analysis". *Journal of Environmental Economics and Management* 5:252-267.

Economist Intelligence Unit, 2011. "Breaking New Ground: A Special Report on Global Shale Gas Development".

Feyrer, J., E. T. Mansur, B. Sacerdote. 2015. "Geographic Dispersion of Economic Shocks: Evidence from the Fracking Revolution". Dartmouth Economics.

Jacquet, J. B., D. L. Kay. 2014. "The Unconventional Boomtown: Updating the Impact Model to Fit New Spatial and Temporal Scales". *Journal of Rural and Community Development*, 9:1-23.

James, A., D. Aadland. 2010. "The Curse of Natural Resources: An Empirical Investigation of U.S. Counties". *Resource and Energy Economics* 33:440-453.

Lansford, N. 2011. "Primary Sources of County Road Funding". *Oklahoma Cooperative Extension Fact Sheet.******

Raimi, D., R. G. Newell. 2014. "Shale Public Finance: Local Government Revenues and Costs Associated with Oil and Gas Development". Duke University Energy Initiative, May.

Snead, M. C., A. A. Jones. 2014. "Economic Assessment of Oil and Gas Tax Policy in Oklahoma". Oklahoma State Chamber, Januray, 2014.

Stedman, R. C., J. B., Jacquet, M. R. Filteau, F. K. Willits, K. J. Brasier, D. K. McLaughlin. 2012. "Marcellus Shale Gas Development and New Boomtown Research: Views of New York and Pennsylvania Residents". *Environmental Practice* 14(4):382-393.

Weber, J. G. 2011. "The Effects of A Natural Gas Boom on Employment and Income in Colorado, Texas, and Wyoming". *Energy Economics* 34:1580-1588.

Weber, J. G. 2013. "A Decade of Natural Gas Development: The Makings of a Resource Curse?" *Resource and Energy Economics* 37:168-183.

Wilkerson, C. 2015. "U.S. and Oklahoma Economic Update: Oil Price Worries". *McAlester Economic Forum*, August, 2015.

Wilmoth, A. 2013. "Oklahoma's Oil Production Growing Fast". *The Oklahoman, November, 2013.*

APPENDICES

Appendix A contains the data for each variable used in this study.

SIC52	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	38253	33344	40676	50463	42269	42623	40942	45867	71190	54146
Alfalfa County	23123	29166	21204	20315	46272	43371	66182	73931	78708	61082
Atoka County	157811	168148	177680	165769	174501	184686	192045	177355	201151	229858
Beaver County	22833	23159	23517	37805	38184	39187	37740	38028	41082	50604
Beckham County	248431	276455	372365	467296	546898	589047	597241	416463	517586	677013
Blaine County	36384	49378	47230	65026	56625	69696	86327	74892	90287	104761
Bryan County	250856	317172	298018	645462	954384	1007805	1186689	1109583	1005885	1093269
Caddo County	129796	126105	143967	155823	151827	182234	201269	171927	182657	175221
Canadian County	1369511	1956513	2341540	2784726	2685563	2703318	3391221	3127722	3130391	3192693
Carter County	571951	1117099	1228547	1372036	1355059	1533336	1587069	1441007	1535974	1622970
Cherokee County	336224	291286	613373	620508	662044	624687	595809	526937	620733	608448
Choctaw County	80259	101603	117594	97244	99656	98028	100651	101478	96205	90740
Cimarron County	14761	10889	5095	2447	2636	1610	2702	5006	4832	-802
Cleveland County	3572210	4559086	4461088	4857696	4774087	5249995	5666675	5495220	5596760	2311825
Coal County	33833	39639	41198	48046	55708	78240	75592	68462	61126	71651
Cotton County	21640	20070	24456	28448	29004	34060	26948	33506	35773	44363
Craig County	143117	124445	115296	136534	134115	153362	147088	138805	138461	188378
Creek County	424401	509682	745272	719912	733843	823131	765092	680219	653249	626751
Custer County	283227	294433	405272	473889	436714	477167	500965	434986	507816	688547
Delaware County	291371	736603	846202	908463	923611	905636	895784	826397	834403	881433
Dewey County	8730	32851	39166	49565	47568	50558	32046	23549	20508	31348
Ellis County	16004	14816	18058	17936	23128	15491	21416	14467	29939	29592
Garfield County	1313080	1375636	1625526	1723511	1777723	1977785	2193585	1965934	1990882	2050834
Garvin County	246576	243642	272510	313530	318926	359670	396504	347532	328962	384331
Grady County	450087	500049	563224	628097	535810	635574	602924	511453	499695	643192
Grant County	11211	13850	20827	17649	9772	15654	23034	29217	17780	24809
Greer County	29268	32793	38099	35098	35372	30178	35538	32631	34704	34461
Harmon County	3386	7095	20035	14606	21751	15475	13690	10507	10822	8710
Harper County	11136	9090	19965	16467	16153	16681	36716	21312	16080	16055
Haskell County	63256	72774	75761	78187	83263	88500	74893	66184	70627	71251
Hughes County	30910	40994	44163	61023	55802	74302	63990	61847	72965	84189
Jackson County	284355	307209	278467	324844	335620	373737	430061	448010	476005	649500
Jefferson County	22118	22683	20141	20356	19315	17274	24995	27963	24990	21886
Johnston County	34152	45100	36383	30056	39066	44067	55899	60530	57301	58536
Kay County	990809	869672	1293508	1087968	1112659	1269498	1261882	1071332	1244380	1209301
Kingfisher County	84575	94982	112854	136713	120926	166964	186876	135281	153348	214240
Kiowa County	51496	50980	47683	56878	55623	49297	62882	60508	57797	88527
Latimer County	22254	23050	34280	36992	32270	48321	44180	35443	41888	42350
Lincoln County	179597	154629	141316	153763	158294	198866	213173	186643	235250	260632
Logan County	155769	175683	164814	212728	188326	246348	277100	223522	189100	209180
Love County	20030	25944	17472	20965	18897	20363	16605	16087	16857	27240
McClain County	388275	501019	1059173	903866	676958	800084	766854	802644	725841	1007455
McCurtain County	185973	190754	181094	136608	126973	144211	156400	149343	175146	177296
McIntosh County	128302	137649	140389	145713	165427	239836	203359	169775	167836	144900
Major County	45221	59367	56106	74484	67650	94795	102978	89287	99289	122890
Marshall County	71199	73434	81168	91195	95306	96280	93929	110254	95923	104309
Mayes County	342700	303520	326263	335157	314433	371274	389748	306159	320344	322299
Murray County	57237	87132	80399	89116	83111	109223	145718	120021	151239	164160
Muskogee County	1525310	1749205	2052374	2108705	1927575	1854498	1709544	1630944	1775152	1871206
Noble County	47596	48631	46045	46061	43949	54170	63290	64982	80789	90993
Nowata County	40375	47815	42572	43546	46941	54561	44980	48379	49151	68592
Okfuskee County	82497	93798	85524	88805	87568	88371	103404	99488	114836	139357
Okmulgee County	197026	229259	192391	193758	176341	218193	218972	209099	219094	201374
Osage County	118363	151040	118817	119410	146264	188047	163534	145006	144099	138940
Ottawa County	157090	166853	171314	204815	185238	286712	246211	222112	227726	283692
Pawnee County	80548	78686	95539	94719	90430	81039	112666	133310	120437	120444
Payne County	1347958	1592070	1912925	2075218	2061205	2357367	2294601	1950909	1803859	1948431
Pittsburg County	467100	510766	592966	1285537	1277048	1395701	1461064	1193341	1229789	1176331
Pontotoc County	460915	538448	441106	978140	955635	1042193	1026929	934322	967720	972211
Pottawatomie County	1365432	1474393	1469150	1509958	1446514	1509754	1564854	1409037	1518087	1489220
Pushmataha County	23900	16799	21711	22633	30613	19453	27380	23927	24681	31495
Roger Mills County	11640	11572	10671	12107	17520	12470	18399	11731	15324	18102
Rogers County	460138	806409	1125341	1174885	1137322	1280088	1371730	1099586	1107957	1185210
Seminole County	162332	214891	198979	297468	291924	404259	304810	291374	309964	221152
Sequoyah County	287028	315630	305455	347096	378411	436916	386735	318787	334505	341563
Stephens County	417466	507807	529300	551023	564757	556675	597546	584527	547938	640738
Texas County	108322	110091	131926	95780	93614	110017	170763	163766	170364	179316
Tillman County	38473	39812	37903	38885	36414	50280	51342	61105	34501	46771
Wagoner County	158130	288815	192573	242511	185351	209401	169064	134889	133311	122976
Washington County	964283	1043101	1169411	1350824	1292248	1379168	1328215	1150240	1220143	1270384
Washita County	61040	66607	67905	75618	76024	91590	131786	135763	110743	185383
Woods County	59255	57208	86753	116488	106026	122512	154525	184581	132247	165425
Woodward County	255734	248723	283381	354798	506632	506673	510724	437874	503744	612466

SIC53	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	450663	440148	481376	821599	977320	1013925	1059428	1024075	1030251	1061335
Alfalfa County	41349	45328	43202	46836	50173	53172	67119	57025	61153	70581
Atoka County	408592	377391	410454	479267	588064	638197	664280	612543	601757	632264
Beaver County	10731	12044	12165	13257	14770	13831	13856	12677	9967	6538
Beckham County	1513859	1767270	2124150	2505989	2552213	2611283	2663750	2289991	3034663	3775183
Blaine County	150605	162876	159148	168285	179336	188272	194684	178330	207523	237483
Bryan County	1915650	2467570	3074903	3437499	3484393	3632320	4354159	3997425	3897159	4087615
Caddo County	1278991	1279614	1350889	1441889	1378930	1421294	1469689	1449527	1419638	1490994
Canadian County	5028582	6395068	7454136	8077971	8254050	8804521	9770037	9561731	9638227	10112539
Carter County	3426089	3720054	3879225	4153097	4486978	5019245	5177432	4832993	4918263	5151823
Cherokee County	1993881	1836913	2020163	2093778	2075655	2170401	2188238	2020896	2179170	2265120
Choctaw County	1039183	1253444	1265843	1361814	1385618	1419333	1490333	1411938	1389168	1445463
Cimarron County	589	843	1193	1444	1146	1418	1428	8551	30886	37596
Cleveland County	14041145	15381089	15169689	16708245	16017745	17715798	19798139	20094928	20440269	21469191
Coal County	48723	47754	48287	52852	62809	67769	71196	73062	74542	80226
Cotton County	39770	36567	37843	39751	41519	47565	50203	53335	53024	57290
Craig County	627175	974560	1055224	1123457	1118860	1150715	1176926	1117595	1106324	1157607
Creek County	3613277	3502432	3708132	4055395	4202350	4774322	4167402	4041831	4347151	4525385
Custer County	1667015	1663668	2135305	2134152	2192669	2327506	2348410	2806394	3033402	3270851
Delaware County	2225668	2264345	2293649	2413122	2450978	2533092	2556253	2486916	2446186	2608730
Dewey County	14595	16671	21584	19926	19331	7937	2972	2506	3598	4590
Ellis County	13767	16006	16694	16599	18461	54166	70010	61037	75543	107454
Garfield County	3863137	4571027	4870067	5080257	5249311	5407617	5627201	5266398	5385395	5854866
Garvin County	1024655	1005487	1141050	1250104	1200496	1948823	2083167	1978981	2003138	2142585
Grady County	1246268	1274014	1271614	1796730	2797855	3038020	3132763	3064189	3120580	3281381
Grant County	2711	2748	3529	4323	3568	4692	6420	5225	6232	6354
Greer County	34945	37438	39003	41365	44347	45695	59199	54780	55697	59676
Harmon County	14117	15500	17028	17712	19967	22016	24562	26716	29171	31124
Harper County	21422	20977	27989	25828	27656	29539	42318	48866	48802	43787
Haskell County	390544	401413	423041	456231	451502	724924	879511	836192	812056	832296
Hughes County	502977	494491	518715	681127	695345	754117	781747	752519	738575	810536
Jackson County	2253149	2339713	2360671	2516912	2466852	2581598	2794419	3224989	3228160	3355770
Jefferson County	44812	40664	40662	43443	48157	50038	51777	58313	62087	63873
Johnston County	41683	40095	39292	43914	51916	65271	85606	90167	90670	97966
Kay County	3297974	3158940	4355662	3852340	3585876	3638957	3886979	3635997	3724457	3988163
Kingfisher County	387964	382958	400012	444582	455451	696469	827294	876470	924380	1013810
Kiowa County	314140	302960	312162	363595	373391	403764	428712	430419	423200	444973
Latimer County	105762	86708	102872	114833	120588	132702	148672	156544	192681	197679
Lincoln County	609597	619274	635602	695319	716113	914822	1290312	1321325	1371676	1538056
Logan County	622636	663763	686703	742650	693162	1107317	1257053	1223769	1232551	1314569
Love County	35565	38052	41373	46180	48500	52378	55838	56459	58598	64627
McClain County	1040747	1284414	4173637	2861820	3728096	3944985	4116116	3995490	3769911	4033129
McCurtain County	1219359	541196	1632847	1801171	1830423	1881802	1933083	1899369	1893419	1972885
McIntosh County	730996	760247	810790	862088	890353	1222931	1981908	1982994	2090564	2180170
Major County	119518	140037	136032	142938	155328	169328	173192	149628	158345	172086
Marshall County	480525	455999	483098	527344	545281	579697	625084	975384	1153859	1231807
Mayes County	1529944	1562760	1676254	2721017	2814423	2978098	3028794	2924378	2859699	3011817
Murray County	469185	469773	492848	534683	532966	580655	622037	874859	977537	1035528
Muskogee County	3164042	3583144	5494191	6295928	6367923	5959651	5272044	5494784	5544055	5722579
Noble County	242034	247629	254783	248665	229553	254248	285041	271950	277594	301310
Nowata County	82946	87690	89509	99194	109961	97981	73110	78874	84766	88797
Okfuskee County	60026	71001	75272	85248	101505	106762	121378	120307	123663	132532
Okmulgee County	2922554	2951633	2943170	3161394	3153823	3211785	3189326	3026227	2898970	2998365
Osage County	516800	562472	620972	1232331	1388835	374532	1532137	1431680	1447302	1517761
Ottawa County	1651207	1692947	1753207	1874766	1871499	1922753	1960213	1939506	2225053	2484764
Pawnee County	468723	444822	511360	516574	509732	538523	572639	550644	557614	836310
Payne County	4806954	4974963	5372412	5953642	6074168	6927216	7843556	7585358	7644202	7999170
Pittsburg County	3538865	4167622	4348414	4596084	4755266	4934277	4892329	4180107	4114109	4350245
Pontotoc County	3458870	3562987	3702253	3940564	3960055	4169934	4249325	3997274	3933333	4124714
Pottawatomie County	3354977	3266255	4231665	4707765	4779210	4997950	5019532	4842706	4907551	5151239
Pushmataha County	94352	92962	99235	118749	129439	136038	146779	154603	177155	206433
Roger Mills County	2850	3979	4368	1842	3371	1621	3863	6859	6738	10373
Rogers County	2957809	3022436	3106297	3141368	3202610	3362757	3374271	3172020	3143105	3320471
Seminole County	1004234	1501125	1685209	1808103	1805544	1897174	2000692	1883277	1863842	1961630
Sequoyah County	1779925	1843931	1954974	2135667	2429121	2537181	2486866	2412497	2281132	2241717
Stephens County	2893047	3171344	3247511	3487368	3543150	3690487	3820901	3670113	3702881	3876264
Texas County	708663	726609	908821	513509	523601	1336887	1985260	1916702	2018201	2202006
Tillman County	90762	100357	110732	118269	125683	129904	132467	127343	133260	138605
Wagoner County	1528913	1525905	1484076	1549487	1587204	1873071	2608834	2414390	2319749	2405507
Washington County	4038507	4100669	4220370	4374271	4418665	4630724	4649536	4420814	4385345	4526657
Washita County	70368	76804	82197	83291	92301	95367	105006	92919	100267	209051
Woods County	815606	817011	1003440	1165415	1141423	1209031	1285393	1203708	1218640	1446488
Woodward County	2220557	2331778	2474936	2697011	2797741	2927844	3007047	2644147	2784344	3070413

SIC54	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	570976	562609	563211	468149	398818	402527	385382	364940	421640	377127
Alfalfa County	159772	163628	152090	138724	138578	160375	169753	169602	196129	251186
Atoka County	374987	304710	301190	313990	397561	434545	451117	420202	426355	457304
Beaver County	75182	82810	77555	70132	87076	78195	80639	95650	82255	88153
Beckham County	1326529	1421551	1451245	1421439	1603362	1908243	2063851	1910035	1955672	2196442
Blaine County	450472	519215	573895	545736	572362	567068	573651	576285	716033	905412
Bryan County	1004975	844971	794196	664578	696849	755456	914627	959344	977559	1033236
Caddo County	809495	823572	781060	686940	687072	820137	840110	831287	815786	881517
Canadian County	1810910	2206377	1817289	1585102	1658635	1775082	1998472	2111108	2342006	2612720
Carter County	1384055	1474229	1404860	1259591	1390275	1687786	1751515	1648314	1750404	1858510
Cherokee County	799443	704341	734889	728596	699772	755653	759427	727536	779617	774771
Choctaw County	311143	314231	7171173	217896	221886	222072	243506	205744	208020	212779
Cimarron County	127469	126494	113300	112746	109334	123955	131831	129656	155786	151077
Cleveland County	5137926	6164808	5007224	4510109	4288937	4437799	5271236	5345071	5379924	5936980
Coal County	119795	95857	82576	74094	116277	186739	190353	169150	198669	200874
Cotton County	155452	157434	150814	156729	166331	171164	187999	184608	175158	153364
Craig County	401323	311723	280098	257805	256740	282998	301927	287035	292041	302370
Creek County	2509821	2488715	2532158	2461125	2531757	2223973	2270170	2247465	2399828	2393428
Custer County	1342952	1323136	1601695	1588207	1690589	1855827	1937056	1533996	1445569	1525175
Delaware County	613484	635821	587669	538755	588278	617348	646115	698228	711005	771201
Dewey County	119278	157186	178812	146373	151214	199805	202043	188610	209860	244591
Ellis County	111952	146621	137808	140652	156985	203234	213498	186082	208390	245062
Garfield County	3061674	2653360	2364319	2160069	2276923	2461407	2647426	2596646	2696053	2932454
Garvin County	1429239	1486679	1455826	1332818	1375109	1233428	1171221	1064911	1193994	1205062
Grady County	1551522	1554607	1543349	1295534	1087487	1166021	1198316	1077768	1123274	1209805
Grant County	158760	172843	158834	151043	151516	173057	179472	173011	175536	214088
Greer County	171302	167223	165657	180466	183510	193562	206675	195526	199434	210280
Harmon County	84874	84245	78365	73541	82739	80073	80996	80823	74594	79736
Harper County	130419	137497	170642	140839	149491	152810	165442	159129	166990	177804
Haskell County	397000	373742	387731	356985	401105	350574	273159	240184	241563	223828
Hughes County	485459	454256	469892	521889	539911	568425	566886	529287	531241	562631
Jackson County	541901	495963	454051	376574	396426	407448	444947	470445	440149	462434
Jefferson County	185731	174009	177235	198079	196279	203721	198836	202112	184579	182376
Johnston County	174393	184436	174640	168157	182227	236426	299366	282763	285199	315501
Kay County	1996499	1848665	2155074	1687375	1730677	1892577	1940559	1825092	1947708	2056170
Kingfisher County	545343	551420	499560	438946	487717	448959	444999	433143	471863	501153
Kiowa County	391700	380374	309709	292241	303760	350069	341415	325359	335451	350635
Latimer County	258145	266194	268173	240707	308763	312471	323620	305581	387011	384070
Lincoln County	1029481	1021792	943097	912418	953339	1018227	922162	897789	896783	943265
Logan County	663814	691465	611678	508901	506969	415342	436720	440362	445373	488144
Love County	158433	151497	146499	150505	166622	177562	182745	171658	171153	175782
McClain County	1356667	1280490	1643217	1039244	884859	964353	930883	909300	951444	1064468
McCurtain County	973821	530643	746014	666710	662868	708634	808602	768953	783803	843961
McIntosh County	1062858	1087321	1012776	978432	1001949	1021682	905315	850900	892148	902269
Major County	312131	335605	316688	321837	368900	376738	416313	376147	393713	437291
Marshall County	514082	514970	464190	475654	495420	526220	509040	349297	327447	328581
Mayes County	1798287	1813147	1760332	1425084	1427961	1667854	1769917	1735106	1793167	1783337
Murray County	431614	469292	433966	406545	428673	448340	515049	488620	478597	480194
Muskogee County	2688439	2842021	2868501	2647435	2739237	2776425	2719272	2704616	2862523	3238050
Noble County	435483	445670	438914	387279	384436	429158	430002	402731	433855	457661
Nowata County	187130	181770	194215	176860	193752	195839	195880	212717	194754	204073
Okfuskee County	248188	277265	289223	284961	304511	335329	360880	349726	363591	364163
Okmulgee County	1337061	1372042	1129927	1033553	1101432	1150911	1207150	1160116	1233921	1255599
Osage County	793567	751739	876499	652681	563996	1665042	657772	579873	550080	523157
Ottawa County	570700	533934	528094	403928	413225	427667	428869	417294	445728	493140
Pawnee County	519148	485682	365812	385366	422696	429007	439363	465743	447538	456900
Payne County	2376513	2379338	2252253	2185575	2133775	2126993	1988700	1962619	2042381	2165840
Pittsburg County	1304714	1299465	1034188	870479	1020072	1058765	1127606	1043472	1132679	1092022
Pontotoc County	1100497	1088616	978680	831069	891360	949601	996472	969705	1038062	1070321
Pottawatomie County	1695733	1626755	1167518	940331	963321	1016103	974072	914325	1022886	1013302
Pushmataha County	400528	416796	388729	359584	423038	466451	494815	494483	508765	533288
Roger Mills County	84334	93271	105052	110003	110949	120546	127380	123090	125950	143242
Rogers County	1803085	1909327	1753445	1862243	1950258	2208415	2356179	2229988	2226487	2243502
Seminole County	1044454	992081	698714	579219	571687	598864	611456	587801	581851	626903
Sequoyah County	1039892	955877	1115345	942834	970646	989730	1122603	1037783	930170	984120
Stephens County	1466924	1447761	1322180	1174889	1175103	1272320	1375896	1229227	1236193	1400447
Texas County	830000	828571	993030	575483	623081	670401	761496	770902	771810	809474
Tillman County	233318	232099	241253	228235	237695	252170	257286	235081	236154	245206
Wagoner County	452894	1226357	454664	445289	453812	465075	438663	414318	406307	420557
Washington County	1515155	1444158	1435355	1319298	1365600	1482518	1566956	1489667	1579305	1655377
Washita County	292278	293586	283082	267262	305488	346642	345987	329564	351703	560689
Woods County	155727	165905	214714	258913	256061	305546	317418	309596	341570	409982
Woodward County	785538	817487	730849	661758	729923	809604	865056	812898	883453	985528

SIC55	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	51662	47257	44188	35568	42795	47250	53827	64235	62505	63547
Alfalfa County	13597	17758	15151	14257	17177	21843	30948	27173	31964	42321
Atoka County	67484	65759	63188	71225	112643	140394	121108	83487	81647	83008
Beaver County	17236	19870	22337	29903	28587	29120	34799	32338	37458	44822
Beckham County	435082	533410	638039	736556	873669	966249	897808	611419	856713	1139715
Blaine County	88779	64026	63478	152080	166273	176070	174872	178056	67821	89435
Bryan County	213558	267001	274885	281249	307066	328531	438449	393180	406764	447712
Caddo County	105169	109029	109876	120457	128610	143089	193270	198152	157482	166043
Canadian County	590249	951581	709252	675681	742019	833316	954559	870863	1125677	680615
Carter County	526883	511036	551150	507512	619257	724444	700469	654805	696929	802455
Cherokee County	139338	157534	170564	175485	176698	180226	198665	185509	194771	193478
Choctaw County	103096	117017	101756	87585	86912	87732	87807	91290	91288	96352
Cimarron County	24844	31021	34809	41600	37043	30448	27989	22077	5116	5432
Cleveland County	1520035	1729865	1579788	1578774	1495196	1579014	1836177	2017095	2191729	2541236
Coal County	16328	15389	12720	9088	6801	4871	6054	5737	5517	7122
Cotton County	12567	9842	6062	6885	5866	7848	6916	7694	6937	7041
Craig County	159285	158987	157077	163653	168640	169434	154761	145016	146344	158838
Creek County	396982	382859	520792	694803	766279	703162	730957	668564	872372	936346
Custer County	242673	280735	368938	301394	317476	424468	419398	364438	401514	494579
Delaware County	221237	229504	214572	222609	220235	222808	220969	237577	248908	252761
Dewey County	14637	13358	17942	18600	20207	26444	38110	36263	40107	45974
Ellis County	16831	19827	24324	27108	31175	35778	32263	26912	41961	54991
Garfield County	777967	835638	808556	796279	872160	936776	977460	882052	982020	1173249
Garvin County	203032	209648	202942	269041	239879	280101	277082	268891	288431	351908
Grady County	493964	516143	519038	491609	525918	595330	547972	491505	499984	589145
Grant County	24149	27339	27032	26432	26570	25301	24745	28676	28861	42567
Greer County	36413	40819	37746	41359	41045	31752	35903	34786	23779	19799
Harmon County	557	2145	3199	2052	2207	2818	1923	1549	1646	895
Harper County	20868	21084	29247	24843	27929	34129	33979	28575	31238	32967
Haskell County	64410	71109	75231	78150	88782	91993	92207	92808	91662	91156
Hughes County	124993	140046	119107	184791	202677	199857	214487	231998	246086	193130
Jackson County	331854	343096	345921	318866	347664	358999	350400	399191	413323	435597
Jefferson County	18179	18700	19057	17626	14459	14231	14219	17579	20664	20336
Johnston County	15866	19050	18381	25250	29389	37714	47840	42408	46736	52736
Kay County	557604	508358	668133	580051	571177	594158	592341	548730	575068	624650
Kingfisher County	179500	171323	181070	173833	183346	200100	206333	201787	230734	267592
Kiowa County	38746	42364	38361	60638	55682	44263	37624	36337	37532	44297
Latimer County	34483	38616	39225	44485	51662	65053	62208	57606	71994	65739
Lincoln County	166092	162188	181632	184485	203183	232734	255445	263466	287782	346879
Logan County	181793	192633	175217	179108	177472	196388	197852	194531	243771	304243
Love County	22946	23165	21197	14444	4652	6622	9616	8529	8828	8169
McClain County	245738	290010	459106	331947	349968	371245	422733	368866	453832	532152
McCurtain County	156608	811	134208	133482	163427	150933	149380	181776	159908	174309
McIntosh County	148040	143449	151319	151739	170661	170598	173188	169968	182126	225771
Major County	88638	101287	102622	98841	122777	145519	126467	148287	137278	167103
Marshall County	65388	69595	79927	79202	78142	96305	105477	97307	115228	140973
Mayes County	264138	273894	264515	269113	283253	308333	306493	330594	350190	377516
Murray County	76272	75155	73756	78922	85389	88218	97152	109975	119478	138229
Muskogee County	663262	760423	861197	931518	1028771	998964	890748	931909	962745	1025923
Noble County	82541	85570	77314	56122	57440	63683	70218	65190	56621	59404
Nowata County	39316	38425	25569	23571	24082	23996	26039	23505	26112	30880
Okfuskee County	46720	52353	42750	44498	44797	41685	50698	49170	53007	50837
Okmulgee County	257541	262160	259648	262744	252983	269839	267315	256630	254970	250966
Osage County	106206	151424	109207	128808	172340	232849	167041	164365	199641	228246
Ottawa County	252711	273934	250231	245126	261540	290222	274394	264698	248659	249206
Pawnee County	53365	58723	53703	62738	59125	63624	60131	58077	68694	77289
Payne County	578141	598337	684425	713863	766963	746559	724378	712535	817281	836057
Pittsburg County	529358	601736	626244	610470	613395	704829	680312	603240	635563	701825
Pontotoc County	440042	469408	444907	428691	450374	493472	482914	496138	518492	592202
Pottawatomie County	493134	512221	527635	464256	487188	579588	569182	573108	586531	608168
Pushmataha County	54503	54369	59952	57160	60774	60533	50507	51861	49470	41565
Roger Mills County	6521	6227	9195	7165	5417	6251	17153	11558	8969	6865
Rogers County	466634	475408	441907	444566	482484	506713	495847	490251	542263	626838
Seminole County	153360	208587	218657	192142	207728	223208	246305	249484	287397	292548
Sequoyah County	261279	254048	226598	215048	264968	260881	284970	279967	273607	269735
Stephens County	387656	417560	442943	469013	554761	532364	581132	624374	585602	605890
Texas County	125026	133857	160967	115034	116229	174120	246726	240733	258030	303001
Tillman County	24171	18419	26528	21313	28817	22139	16986	19153	18347	20581
Wagoner County	125550	152113	124642	131596	136629	142620	155605	163071	184453	191567
Washington County	454635	488741	519926	497367	520168	532520	512433	489506	491932	511403
Washita County	38476	43986	49763	60233	55910	76685	77355	63621	47247	79746
Woods County	80376	81242	101378	116843	127813	145486	148360	139292	156778	189703
Woodward County	330824	427011	447172	481556	613550	607823	512916	382496	494809	624731

SIC56	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	10367	11258	13794	12047	15586	18468	11954	12368	9909	10001
Alfalfa County	3571	3725	3816	3457	4669	1614	560	366	645	768
Atoka County	1873	1177	7809	3754	1980	10529	13112	5426	3784	13439
Beaver County	71	75	126	71	1321	1561	1594	1523	1289	408
Beckham County	196857	228537	269632	286605	323855	333359	336266	285843	336048	411284
Blaine County	2024	3679	2012	1201	1010	1499	1907	1834	6578	9201
Bryan County	151644	189239	280722	307240	304587	288208	311908	300715	318396	340634
Caddo County	6047	5221	4263	2616	2769	4681	3467	3933	4639	4750
Canadian County	128024	161902	114838	140666	168556	170868	206969	262462	322856	328239
Carter County	423272	443834	462862	478441	520632	557007	560625	549649	803966	878138
Cherokee County	179494	162469	182067	185423	185850	183122	163887	122725	151909	168200
Choctaw County	34520	35234	36608	40930	45648	61629	70380	71940	72789	78081
Cimarron County	3741	2694	2506	2763	831	827	847	955	1148	1356
Cleveland County	2352315	2570300	2590957	2631665	2457848	2679641	3119271	3357779	3611620	3674486
Coal County	857	943	817	988	1233	1980	1321	2141	1921	1373
Cotton County	222	314	403	328	609	595	694	997	1235	1125
Craig County	48026	42087	43523	37486	35614	33497	31670	30856	32121	32358
Creek County	155274	153194	155875	165153	192383	217670	171239	159486	166107	176944
Custer County	232086	222050	322689	298872	290355	308468	310573	278150	313900	354529
Delaware County	95278	101351	94171	92556	94940	92255	81976	95423	102411	111467
Dewey County	1553	2686	1620	4056	986	4990	1359	1101	6436	2711
Ellis County	2557	3213	2583	2388	2220	2032	1936	1231	1706	2329
Garfield County	528748	526594	537601	626312	675632	729802	689321	682747	742976	837662
Garvin County	72340	73041	72124	72881	71457	69173	66394	64561	69776	70074
Grady County	210348	215659	221101	220813	246541	253362	214102	203946	251373	253336
Grant County	5199	5178	4785	4468	4914	4692	4427	4184	3603	3618
Greer County	60	83	243	150	164	287	338	316	940	896
Harmon County	711	295	339	293	362	318	245	235	251	397
Harper County	1829	2315	3951	1558	674	1153	1562	934	1195	1042
Haskell County	7407	5700	10928	18007	12948	12503	9489	3302	3204	5194
Hughes County	1588	2306	2546	2833	2530	2691	3530	2945	2964	1855
Jackson County	211173	219649	216256	211168	209134	207328	195710	214080	255218	265414
Jefferson County	33	60	181	97	164	222	362	461	495	678
Johnston County	3206	2135	2832	2903	2880	3680	8928	8990	6288	7982
Kay County	291691	260259	368795	363797	364291	338470	335881	303403	326925	321832
Kingfisher County	16920	15705	17698	17608	17042	20150	23680	12925	13015	14897
Kiowa County	7717	5907	6248	6478	5061	4852	5480	5097	5912	7932
Latimer County	977	605	2557	2030	1511	3227	3305	3031	4051	4799
Lincoln County	29810	5963	7294	6035	5855	5796	5654	7305	7414	6633
Logan County	12062	16076	13858	16048	11782	11076	36302	46242	42835	38228
Love County	2544	2499	2542	2415	2536	2012	2138	2038	1659	2289
McClain County	21303	16396	40563	39275	46612	61877	75877	89508	99975	105453
McCurtain County	123768	125132	119629	113430	114820	107381	114185	139123	143738	134090
McIntosh County	7342	11248	6404	11375	18749	17146	19442	21383	25502	27232
Major County	6503	838	468	378	386	492	1042	1304	1589	2414
Marshall County	6097	4152	3938	2327	949	1247	808	3700	11840	15254
Mayes County	104331	93377	81281	110216	114589	118258	125692	125521	131672	141073
Murray County	206	421	495	473	396	600	1078	1956	4963	2407
Muskogee County	396989	447765	493968	570625	728597	761623	661341	771359	805992	823288
Noble County	2315	3715	7230	2419	1074	2416	1785	4457	5765	5931
Nowata County	289	752	448	554	-129	132	377	547	806	1015
Okfuskee County	965	511	792	778	446	319	501	624	512	840
Okmulgee County	118030	122415	133961	140726	139902	129878	123236	130459	131773	131120
Osage County	10512	25927	8364	8640	7846	77534	7620	6530	6420	6566
Ottawa County	54217	57270	56945	62155	49182	47717	52194	64170	76283	82380
Pawnee County	9478	5387	19934	7814	5464	5501	5979	8413	6921	5557
Payne County	950021	959962	987138	968516	1318605	1267117	1203572	1213715	1281828	1421745
Pittsburg County	306783	322254	339718	366047	359494	414666	326512	272228	312931	322579
Pontotoc County	489192	469969	453164	454660	469794	459774	412205	401394	410536	451259
Pottawatomie County	366118	361204	386161	377815	446125	599008	694095	697215	734757	737568
Pushmataha County	303	60	646	577	764	706	982	1631	673	1064
Roger Mills County	271	242	428	353	223	649	242	1284	1929	2198
Rogers County	130445	132781	134175	148616	134279	135319	127908	121828	146147	150959
Seminole County	48078	53374	53646	52029	55104	55694	52011	52193	56910	64390
Sequoyah County	55104	72915	74962	77437	93646	90076	89998	90383	84090	77355
Stephens County	251436	283593	300396	326191	329284	304846	241426	222328	249069	261919
Texas County	80397	87559	113193	62006	57043	76505	110754	116535	127812	124254
Tillman County	361	362	315	472	568	592	634	680	692	856
Wagoner County	6632	7748	11793	7549	5527	15652	22097	19389	24433	21793
Washington County	297787	346039	368002	367068	411426	427750	392628	352540	414145	433399
Washita County	1857	2456	2626	3060	4801	2937	3207	2769	3859	4610
Woods County	26152	23927	25879	28115	32797	48975	36947	38763	42377	44554
Woodward County	192567	188288	199792	193596	219819	265352	243605	213074	261132	275924

SIC57	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	25598	18566	33725	43650	37432	39559	39401	40852	55439	63190
Alfalfa County	9818	13390	14266	28664	24292	17461	14112	15425	16563	23796
Atoka County	40247	74051	51229	42467	49007	56132	41367	18986	27203	44220
Beaver County	9178	8309	8876	12721	15477	16655	15986	14699	16446	18612
Beckham County	247183	361785	418146	475887	574173	599763	619174	454259	504404	614273
Blaine County	41994	54074	57637	55432	50147	53389	54923	64114	43644	46962
Bryan County	283481	285861	312298	359768	386674	433128	462663	437474	449472	451080
Caddo County	100141	113835	117622	112916	136443	125352	109397	93376	118102	130065
Canadian County	360785	795963	809965	978957	1060513	1250046	1231019	1194916	1319948	1387057
Carter County	635955	678860	617024	813379	1071559	1213159	912685	723107	737743	769999
Cherokee County	179446	183375	188188	158027	158860	180935	205537	162103	170627	167061
Choctaw County	33507	44772	31734	36324	29289	32028	40234	38228	39850	34015
Cimarron County	10541	14300	14591	17002	16867	21896	21251	21152	29685	22242
Cleveland County	2073131	2947658	3467431	3652766	3841256	3944191	4635991	4525290	4852363	4801668
Coal County	6438	8462	5353	7899	13781	12417	18758	11832	12153	9152
Cotton County	3818	5072	3153	3068	4904	5498	7344	3261	4195	16707
Craig County	111965	105516	99723	88665	95498	95028	96871	77140	90543	87021
Creek County	426925	432228	49650	493162	511598	656172	537221	551239	483855	472902
Custer County	245287	307600	314907	361850	412315	459209	419912	364724	420839	518487
Delaware County	183264	176612	164363	180943	189574	194242	182173	191311	233591	273516
Dewey County	3799	7822	10064	14910	14416	16885	15473	15275	19130	16756
Ellis County	2932	7340	8332	5653	8455	12813	7567	10017	11472	17420
Garfield County	729180	821196	949500	1074304	1197525	1200863	1044652	1016702	949655	1087430
Garvin County	148050	153785	151154	177516	170285	172166	181139	145072	173938	219214
Grady County	226667	249520	285451	340745	406088	450621	406832	316976	382781	445853
Grant County	4511	7517	13980	22023	31295	12969	11305	12332	14244	17208
Greer County	6646	10722	7696	8739	9267	13522	11350	8976	10175	13766
Harmon County	2105	4229	1918	2653	3497	6395	6265	2104	3347	3189
Harper County	3796	4406	11948	8210	9969	11857	8981	8159	9205	8191
Haskell County	34905	42481	43432	42557	52509	54226	61159	52992	44365	46211
Hughes County	39034	40584	37945	49593	66153	114135	108901	81219	72229	49696
Jackson County	235138	293908	287684	282181	331842	326723	371645	376696	361525	384151
Jefferson County	1890	6195	3866	5082	4226	6458	5958	3557	9133	10867
Johnston County	18810	24652	24307	27345	28333	40092	48459	48323	44523	47377
Kay County	491571	477099	651514	560129	599348	626586	606319	537154	621160	606992
Kingfisher County	74832	115340	190765	186497	93144	94440	137051	113724	103049	166662
Kiowa County	28689	27470	35440	29758	31972	34800	40802	40452	39145	45733
Latimer County	9858	20096	25059	33353	30592	24244	14518	13535	18099	34732
Lincoln County	87633	88374	88793	94824	93961	111909	105604	98075	106297	120405
Logan County	63132	313859	85850	85223	105681	100390	561416	51534	78719	134556
Love County	20494	22304	19324	39292	21352	16423	19171	15249	16190	20838
McClain County	142958	204283	320871	277620	291768	289442	266073	229637	279566	296834
McCurtain County	159927	164201	158511	163374	172023	202222	178539	140797	149349	148156
McIntosh County	105577	119081	134377	133838	143035	154690	159743	154284	119679	75457
Major County	35412	46195	59590	59969	52840	47091	67218	77603	83620	91837
Marshall County	26189	46860	42317	39878	45167	48774	40774	38529	38496	57908
Mayes County	296526	326112	314033	314047	358391	427799	422532	357387	325655	258515
Murray County	36278	47929	55392	54384	58201	60932	68200	55352	67786	89133
Muskogee County	722098	867525	964311	1062304	1134184	1107368	1017972	1041857	1481861	1308111
Noble County	53101	34250	40783	35373	29001	35961	31056	33017	28693	41776
Nowata County	28860	40112	32484	37688	50004	44434	47290	40863	35458	25040
Okfuskee County	36533	40405	41000	45961	54150	58785	73921	58247	50295	38744
Okmulgee County	315341	370983	341637	368980	341232	378205	380972	377784	363588	330722
Osage County	139924	391763	134779	148390	167391	100877	179283	174145	149111	92186
Ottawa County	171654	135131	146294	163166	188538	212855	211480	189440	233863	230794
Pawnee County	54147	60903	159516	67105	66405	66144	74295	66082	69026	68669
Payne County	694252	750017	830179	948960	955216	1009939	1036650	947071	1401210	1409819
Pittsburg County	409394	507466	569415	570863	707171	817919	874809	717505	643689	505143
Pontotoc County	571526	726465	507939	670370	669253	725425	686641	624226	593848	650493
Pottawatomie County	455542	487478	483178	523512	543913	610406	597042	772169	1090145	912345
Pushmataha County	19163	22913	22352	22832	25833	24710	26464	24486	37778	27017
Roger Mills County	4871	2499	7577	4477	11211	8521	11862	11097	11539	19724
Rogers County	380001	462726	416583	442607	444528	477121	538924	406622	373115	316758
Seminole County	68675	82038	85426	115870	128705	152510	147883	130622	186980	170098
Sequoyah County	166460	160579	169892	176839	179944	206530	212179	213354	206344	257120
Stephens County	471912	491944	559964	615588	706401	813933	749917	581421	638239	629253
Texas County	151470	164301	202569	116425	153655	193454	266715	224644	297977	307822
Tillman County	21947	27200	29220	25996	24973	28768	21456	22000	21475	33386
Wagoner County	128852	10769	162277	144147	157672	174051	160703	143829	112135	77373
Washington County	1001779	697750	714360	768685	889825	899181	840397	728675	754133	672693
Washita County	23346	24795	40409	34819	58216	55736	63484	45434	41056	71066
Woods County	80761	94136	121189	140131	163875	168286	169247	145538	143449	138269
Woodward County	225915	233099	287710	315267	431398	417260	412033	312323	322746	397617

SIC58	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	183777	185952	222800	257603	295010	301705	313269	310257	324978	323113
Alfalfa County	44714	43410	49354	43139	49738	61397	51823	53966	61770	81075
Atoka County	165683	176798	197285	224860	295718	324664	321497	296407	310923	345704
Beaver County	14788	13044	15657	18854	20138	18235	16898	17279	18346	22377
Beckham County	603313	648544	831666	938060	990425	1104563	1195989	1032283	1204782	1472105
Blaine County	159614	206612	274848	204872	215155	249993	273853	237757	246560	309772
Bryan County	678556	745027	963938	1144631	1273594	1438287	1630156	1910022	2322241	2553558
Caddo County	296639	297380	352595	388435	404092	425013	464028	453476	452045	520808
Canadian County	1709279	2226410	2437221	2767608	2935006	3385255	3564147	3556843	3848814	4463261
Carter County	1428008	1634746	1782884	1895346	2099890	2427336	2454100	2419836	2601795	2831437
Cherokee County	609098	593620	676859	710688	806477	904046	905443	863805	944241	1029306
Choctaw County	172263	216070	255827	297602	313674	353297	349255	335577	325710	337938
Cimarron County	33537	32963	39185	63936	24496	52969	52286	46827	50549	42961
Cleveland County	6841696	7871138	8128272	8705025	8834093	9979028	11207432	11763201	12539859	13277656
Coal County	37998	38816	37989	44356	60706	77641	76406	64323	51083	59633
Cotton County	42035	43487	48007	46361	51961	55695	53894	48239	60927	70065
Craig County	288342	297185	357616	374286	382502	382826	382476	379597	420067	434596
Creek County	1167889	1309360	1515388	1665832	1810701	1865388	2052691	1998827	2165225	2191674
Custer County	720597	783625	1108313	1133501	1186763	1308604	1450255	1379676	1516052	1710658
Delaware County	499239	556288	604486	623096	652559	723452	767819	757319	775367	821820
Dewey County	28551	38560	42025	37951	38928	46249	47734	56384	56754	58294
Ellis County	47775	49740	51093	53270	56757	58854	62536	51715	61850	70571
Garfield County	1898182	2009071	2183003	2421668	2522313	2731791	2979546	2850213	2991176	3313834
Garvin County	554395	594371	701317	805061	862856	890035	898581	880210	904723	1050124
Grady County	930271	963476	1152243	1184635	1239613	1339245	1425078	1350949	1408442	1538913
Grant County	20630	18107	19434	28958	29886	29189	26842	22480	30289	52526
Greer County	43150	58481	51618	60184	60170	65399	59383	63916	70577	73880
Harmon County	15493	14290	13770	14611	12776	9480	9341	7568	8185	5997
Harper County	16643	20849	20820	12513	7810	12322	16530	27277	29190	20917
Haskell County	99429	109320	123646	124573	126497	126707	138334	143765	145600	171883
Hughes County	162592	210550	213657	194475	214114	271705	255246	264059	280125	341181
Jackson County	698046	728955	786789	837457	870952	896223	979726	1177389	1250754	1302074
Jefferson County	33414	31342	27838	25356	26179	32900	35343	39005	37908	36354
Johnston County	40687	40019	44192	48796	51578	99342	111376	93668	94449	106162
Kay County	1307384	1253685	1748270	1679487	1589498	1633242	1673602	1659162	1741141	1971460
Kingfisher County	176858	189710	283719	311499	252382	364339	459444	442880	470299	524573
Kiowa County	111913	105967	122625	121247	130590	158675	157696	168099	173390	155547
Latimer County	97610	81037	79938	105389	123166	124280	108915	133941	175870	166253
Lincoln County	477744	493584	536334	575218	614322	640273	609378	635201	580570	664168
Logan County	413167	445801	480235	530006	584352	619951	622500	581521	587510	681759
Love County	63056	63369	64768	68494	70392	69351	167200	140058	128963	118827
McClain County	607013	683169	1316590	990003	1171915	1462792	1519596	1545276	1704556	1321141
McCurtain County	374326	399788	459718	497062	524953	558272	567280	578835	607782	673266
McIntosh County	386527	409554	445552	489195	512497	533542	631256	590565	620223	682498
Major County	90990	108289	109748	121805	124392	128547	128233	112942	124250	136223
Marshall County	174678	196682	251995	282490	297351	292498	318887	312932	317710	370424
Mayes County	761840	875083	977018	1060622	1229602	1381585	1286202	1216123	1224697	1428336
Murray County	168575	172942	187190	226370	244896	272921	312531	337752	355120	369213
Muskogee County	1791958	2117660	2706531	3026256	3108938	3177467	2984577	3207445	3488511	3884214
Noble County	190740	202225	218990	208867	197740	219179	248375	227484	248436	276700
Nowata County	81136	92383	92854	82182	93493	103861	100303	93969	91838	107444
Okfuskee County	105848	120771	139927	131670	136276	132942	111776	127963	124946	182136
Okmulgee County	942633	971688	1006161	1127659	1126107	1164068	1241352	1118643	1159338	1165988
Osage County	379698	510155	419092	492951	517568	342232	574871	586012	623314	798541
Ottawa County	540621	555814	597931	605996	629453	671766	660660	644940	793887	886967
Pawnee County	199190	223354	120401	271245	294578	314365	303665	307629	246983	333875
Payne County	2351850	2480464	2894797	3289866	3480535	3679796	3926915	3929389	4133901	4551399
Pittsburg County	1006507	1153594	1334466	1498684	1598542	1888212	1862391	1728697	1853553	1967417
Pontotoc County	1120385	1192239	1266835	1522303	1625414	1851270	1853529	1846042	1889238	2071753
Pottawatomie County	1732009	1871056	1959624	2065269	2181448	2366633	2478067	2453971	2681122	2816926
Pushmataha County	97834	106696	119028	114272	125945	122721	144936	149161	149447	158250
Roger Mills County	21577	17734	15440	28106	29604	32054	35962	24073	22772	28037
Rogers County	1277006	1452314	1573053	1588309	1642978	1737277	1763580	1858650	1967626	2161682
Seminole County	557141	570730	568472	580574	628178	724101	707786	688807	737319	846317
Sequoyah County	569557	627017	702139	793965	920620	948764	969627	968286	1009185	1037432
Stephens County	788914	914292	1045561	1157747	1244416	1332428	1349555	1274425	1373619	1486811
Texas County	344183	365543	463687	292072	312317	502129	673016	663118	721057	783014
Tillman County	78166	85373	95521	100140	96532	102573	102626	105613	110837	120314
Wagoner County	431308	640803	500808	540191	582825	616684	649234	665768	659795	716288
Washington County	1333231	1387059	1487751	1623803	1691491	1797894	1824287	1753222	1934519	2105372
Washita County	77057	80742	90713	93774	105059	91838	82252	79293	101690	167183
Woods County	160832	194817	255237	287424	300772	329490	357532	365833	377470	463992
Woodward County	586849	760446	725290	783911	842137	946745	1008581	888624	1066202	1230582

SIC59	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	83244	78231	57542	29618	61613	60739	77420	92619	118065	98635
Alfalfa County	25176	27598	27441	27470	33424	21860	29968	30505	27755	34180
Atoka County	68789	69800	73866	75797	105152	479019	174343	100691	116785	122442
Beaver County	14281	11823	13252	11206	12543	13527	13509	17935	15259	18229
Beckham County	407521	452157	447722	556781	883616	801016	622424	544385	858005	884276
Blaine County	105960	99904	111741	95863	105189	78824	81861	70996	105254	156916
Bryan County	380378	400471	516067	446719	566611	614501	1081641	771403	754962	673333
Caddo County	161753	173802	138452	118658	148737	206760	196049	166585	171280	205500
Canadian County	809557	1389501	1265434	1088604	1470797	1529856	1678108	1764620	1939581	2055418
Carter County	1082188	1060404	1140620	1011491	1427683	1588888	1626747	1636755	1819953	1798600
Cherokee County	231751	235444	235379	229158	324745	345153	386564	409490	403011	427412
Choctaw County	121564	145715	151216	98663	152904	157830	166884	162589	145061	145391
Cimarron County	19642	20873	16696	17413	22321	18800	19115	15455	16155	15183
Cleveland County	4067027	4857762	4540141	4417613	4748911	4818581	5522879	6246204	7204319	7842588
Coal County	61438	69664	65872	69889	65546	84392	44388	36102	37092	35399
Cotton County	23358	22010	24748	21722	25434	24391	19911	17565	15433	12690
Craig County	93905	91196	75337	44475	85786	83781	90025	92152	100386	105181
Creek County	594221	583855	933202	554678	752146	803449	762029	702870	751579	791487
Custer County	649702	645265	1061967	738012	857536	931864	932146	858799	903406	1239488
Delaware County	328971	366380	369085	298781	409470	484958	501701	495469	524551	501004
Dewey County	82649	93818	127511	116637	119099	123827	145072	83530	246076	171208
Ellis County	25187	28511	27718	24588	28283	29790	30281	23912	37501	46993
Garfield County	1783027	1812995	1795806	1701568	1998866	2032847	2114930	2036731	2101638	2304226
Garvin County	204390	252997	263923	251233	361457	371437	389450	375279	388544	440033
Grady County	540512	587480	500500	541662	682606	575888	691254	667195	756905	761027
Grant County	18868	27260	27187	22223	29075	21534	32091	30180	29809	30295
Greer County	25854	22927	28346	36561	42176	26046	36245	38330	37630	39795
Harmon County	12647	11492	14018	10254	13662	11396	9868	9355	13331	11708
Harper County	17766	16108	24989	18474	20558	30506	36416	26483	34577	21815
Haskell County	79716	89366	73076	37658	68100	64243	62841	59120	75887	66893
Hughes County	91234	87284	86091	74690	111776	117290	131597	143103	135132	139683
Jackson County	328322	338620	300215	186399	280273	344119	428509	464073	520151	511370
Jefferson County	36035	31767	34168	31278	35975	33468	34322	32933	33165	29696
Johnston County	25227	38058	41025	43785	75158	61748	78087	72611	78224	86151
Kay County	959516	921878	1253177	962013	1101954	1088373	1149994	1171826	1211327	1225699
Kingfisher County	96220	94087	105287	123043	226321	142649	143808	160148	153185	176338
Kiowa County	66906	64163	71652	72674	87089	77951	80589	83946	84947	84381
Latimer County	54867	59646	50967	55198	69071	61580	80185	92037	109898	102172
Lincoln County	206930	228350	284281	196679	244431	223884	267115	260491	310368	287835
Logan County	180625	440497	170237	156004	201353	226603	248865	240770	256752	286914
Love County	25680	29958	30573	33445	96002	30610	38434	32421	31134	28864
McClain County	237348	211669	345350	158845	258292	302627	351774	376803	475962	932356
McCurtain County	203462	235110	192269	153851	251852	252811	256074	268250	270250	305715
McIntosh County	201009	206513	200176	218445	233420	237981	223403	229738	249754	265008
Major County	45942	44611	59348	51951	66763	67284	73709	62780	50562	52951
Marshall County	103198	133549	122869	114991	138741	145860	136082	130351	116330	111159
Mayes County	392112	434512	422946	355163	494657	490914	475297	472369	485599	504961
Murray County	70640	68788	67362	48979	79519	73985	79962	82027	73472	79519
Muskogee County	1283049	1435508	1709285	1709091	2092034	2139346	1829419	1945567	1972675	2150019
Noble County	73092	84369	62541	70809	105567	66106	82305	75049	122254	76646
Nowata County	65968	67718	56793	37861	37951	35735	37552	34482	31702	28607
Okfuskee County	62834	79263	85646	88900	91750	87038	86859	76308	82286	84643
Okmulgee County	293542	305434	302329	201805	343582	363572	412577	389303	432146	415876
Osage County	142755	348785	143333	90260	174688	376540	187980	124049	172414	155633
Ottawa County	238427	259984	310598	253732	320501	347183	348431	301607	337955	366211
Pawnee County	100222	104841	95604	84757	85028	101771	97581	80118	101931	119650
Payne County	1737483	1872422	1987110	1986517	2256041	2377228	2264955	2219551	2301600	2478179
Pittsburg County	640508	716908	735374	636333	938184	1058613	1047152	959014	1014525	1067082
Pontotoc County	834063	884017	879042	789159	1050224	1072806	1093062	1135712	1142072	1151778
Pottawatomie County	1033990	1115876	999629	1011415	1144876	1194220	1148404	1147295	1166060	1237034
Pushmataha County	90042	93542	93331	102003	115239	110423	117372	107784	108169	106793
Roger Mills County	8831	13425	13444	26022	38998	12502	15055	13711	15598	14242
Rogers County	593739	802039	699137	706563	858141	827448	825474	909540	907334	1008562
Seminole County	196555	199752	199422	153279	231572	242579	233308	240069	268542	234003
Sequoyah County	221804	236850	211808	104333	293917	293670	282061	273957	260111	254112
Stephens County	603135	640431	637876	578835	748575	814786	848658	795433	903057	932271
Texas County	255050	240297	318575	164607	270127	258776	364636	361363	392845	436304
Tillman County	26472	33807	30595	40545	39046	37868	53926	36595	42431	56807
Wagoner County	138059	545213	124621	88253	143095	152648	199982	211042	237537	250398
Washington County	1042613	1037726	1093327	1042910	1189705	1226817	1208766	1168571	1243702	1292532
Washita County	37317	29791	33975	45350	47789	56147	57298	49860	55570	88295
Woods County	86274	143363	142538	106920	171326	162800	181800	195283	184940	209308
Woodward County	294607	309619	362797	319226	544967	596493	565175	524286	558295	623879

MHI	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	27374	27823	28594	28908	30668	29809	28105	30190	31680	31544
Alfalfa County	31630	30857	32845	33508	38470	38916	37923	35615	38852	43892
Atoka County	26703	27211	29424	28586	29810	32735	32913	33304	34673	36614
Beaver County	38161	38031	39989	43544	44529	48051	45775	48158	49683	52134
Beckham County	31659	33632	32250	35286	40947	45809	44634	41277	43565	50342
Blaine County	29487	28139	30453	32740	35117	36983	37714	44558	37882	40797
Bryan County	28687	29055	29157	34484	33584	35070	35502	36925	34276	37157
Caddo County	29057	28860	33974	31368	34378	33111	35434	36077	38583	34246
Canadian County	50181	50941	50674	52007	58044	61195	64492	57018	60225	62984
Carter County	30870	32046	33778	34471	36379	39360	37352	37316	40122	45787
Cherokee County	28084	29133	29761	30243	30535	32296	33533	33393	34968	35482
Choctaw County	24458	25197	25796	26762	28392	27774	26803	29476	28598	30115
Cimarron County	27439	27559	29781	31437	33233	35513	32186	36183	38572	39376
Cleveland County	45889	46681	45645	47870	51052	53950	51958	51468	51900	54036
Coal County	24536	25525	25281	26998	30241	32259	31666	33472	35475	33185
Cotton County	29262	30423	30846	34750	36718	44923	43590	39941	38129	38044
Craig County	32549	31655	36233	34182	36260	38954	35498	36407	36996	37586
Creek County	35379	36134	36563	38072	41745	43282	40859	41331	41000	44130
Custer County	30533	31707	32349	33685	40287	40013	39849	40741	41678	44842
Delaware County	29752	30385	31796	32019	33139	36518	34365	32878	35936	36765
Dewey County	31615	32482	34243	35097	36735	40060	39608	39731	41124	45763
Ellis County	31123	31883	32579	33590	36924	41204	40073	40851	42728	49545
Garfield County	34432	35597	36266	38295	39904	42893	39941	38827	42800	45370
Garvin County	30705	31926	32413	31965	38360	38431	36436	37689	37878	37980
Grady County	36847	37487	38488	38473	43341	43057	44143	44036	45688	47619
Grant County	31420	32319	33236	33730	36667	39584	41637	37938	40691	45138
Greer County	25334	25499	28504	28791	30911	32660	32191	33199	34350	33761
Harmon County	23582	24347	24639	25183	27635	29456	27027	28914	30329	28570
Harper County	39497	38092	37683	39484	43201	45072	42523	41437	43198	47375
Haskell County	27644	28367	27328	29937	31592	34327	35140	32551	33309	32746
Hughes County	24613	25324	24973	27158	28689	30932	30438	30699	30888	30949
Jackson County	34449	34881	35996	36441	38313	39249	38407	39565	40129	40024
Jefferson County	24303	25274	26103	27226	28843	29596	32085	29992	30755	31684
Johnston County	27357	28306	28405	29238	32556	32393	30924	32247	35713	36135
Kay County	33128	34028	32984	37205	38080	40446	36827	38775	39152	39591
Kingfisher County	41000	42825	42725	44316	49242	52284	49491	48255	53050	53332
Kiowa County	27520	28051	27284	30477	31731	32075	33936	31850	35977	36329
Latimer County	28497	29583	29100	31956	34060	34598	34629	35306	35660	35649
Lincoln County	33030	33820	34711	38338	38204	41053	40163	40076	38058	44149
Logan County	40997	41936	41091	44231	48003	48004	48012	49006	48346	51642
Love County	34309	34431	35462	37868	38921	41399	41220	41784	40853	43083
McClain County	39983	42649	43352	46480	48654	52822	50936	51767	54633	54495
McCurtain County	25186	26113	27950	27762	29249	30470	29207	30708	29614	30712
McIntosh County	26796	27302	27916	28709	31251	30076	30028	33771	32487	33031
Major County	35110	35186	34006	38326	41007	43895	46588	44736	45374	49718
Marshall County	28423	29344	30053	34008	34819	35091	35058	34924	35610	36096
Mayes County	32199	33272	33849	36312	38040	37044	39484	40253	40229	38724
Murray County	31166	32707	33507	37007	37934	40268	39010	39629	39914	42510
Muskogee County	30676	31367	31525	32962	36490	34727	33651	38528	35443	37103
Noble County	34890	36448	37846	36596	39414	42503	41644	41580	43416	43922
Nowata County	31229	32048	33349	34795	35578	36501	36944	38040	38453	38497
Okfuskee County	25205	26340	27110	29005	29516	30527	32186	31423	31150	31556
Okmulgee County	29104	30221	29978	32169	35018	37460	35758	36119	35226	38216
Osage County	36590	36557	37971	37774	42245	42330	43350	41589	43170	44528
Ottawa County	28473	29948	29563	31316	33841	34873	33425	34998	34431	34581
Pawnee County	33024	33914	33840	36719	40255	39489	40289	38550	41938	44198
Payne County	31031	31529	31057	35458	33840	39364	36164	36874	37075	37874
Pittsburg County	31255	32412	32835	34390	37113	39722	37526	38154	41712	40080
Pontotoc County	28493	29230	30916	30866	35895	34465	36196	38514	40378	37492
Pottawatomie County	33737	34384	34578	36752	38614	42013	38763	38259	41520	42255
Pushmataha County	24071	24988	25542	26046	28348	27771	27930	30070	30190	30604
Roger Mills County	33436	35559	38655	38248	41268	45159	45928	44595	50761	49443
Rogers County	47878	48555	49926	52525	52866	55860	56983	56107	54974	56547
Seminole County	26564	27124	27378	30008	33207	31547	31652	33080	32976	33940
Sequoyah County	29303	29890	30529	32254	36370	34142	31563	35250	36080	34195
Stephens County	33734	35103	35897	37448	40866	43581	41788	40996	43765	43405
Texas County	33847	34500	37272	38416	42069	44775	42653	44313	44550	45199
Tillman County	25878	26537	27228	29260	26120	31463	30448	30364	32122	32382
Wagoner County	43281	44739	45462	48224	53455	55274	55948	56216	52717	54839
Washington County	37787	38270	39972	41112	46298	45023	45764	45957	47645	48851
Washita County	31483	32842	34341	36362	39151	41971	42910	40523	45374	43590
Woods County	31245	31195	31955	33385	38183	38676	40007	37981	38688	49416
Woodward County	36030	37946	40146	42318	45700	49087	49154	48584	48420	49070

Poverty	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	20	18.7	22.4	24.5	25.4	22.9	25.5	26.5	22.2	26.4
Alfalfa County	14.2	13.5	16	16.5	15.3	17	16.4	17.6	18.3	15.9
Atoka County	19.4	18.7	22.8	21.4	23.6	20.8	22.5	22.7	24	23.2
Beaver County	10.6	10.2	12.2	12.3	12.7	10.9	10.7	11.6	11.2	10.4
Beckham County	16.1	14.5	17.5	17.1	15.6	15.8	15.8	17.7	16.7	16.2
Blaine County	16.4	17.4	21.7	20.5	19	22.6	20.9	19.9	19.3	16
Bryan County	17.3	16.6	21.9	18.9	21.7	20.3	22.1	17.1	20.9	19.6
Caddo County	18.9	18.3	21.2	21.9	19.6	21.3	21.9	21.6	20.4	21.4
Canadian County	9.2	8.3	8.6	7.9	8	8.5	7.6	9.3	8.3	8.4
Carter County	15.8	14.7	17	17.5	16.4	16.4	16.9	18.4	16.2	15.8
Cherokee County	19.3	18.3	21.2	24.8	31.8	25.3	22.1	22	24.6	24.6
Choctaw County	22.1	21.1	27.6	26.7	26.8	24.7	26.1	25.5	28.1	22.5
Cimarron County	14.5	13.2	17.1	17.7	15.5	16.3	18.4	17.7	17.8	16.8
Cleveland County	10.2	9.3	11.6	13	10	11.4	11.6	13.5	13.3	12.4
Coal County	18.7	18.6	24.2	24.5	24.4	22.2	21.2	21.7	22.9	21.7
Cotton County	14.7	13.8	18	17	14.3	16.8	16.6	15.6	18	17.5
Craig County	15.2	15.2	16.1	17.1	21.5	19.2	20.2	15.9	20.3	19.8
Creek County	13.8	13	13	18.4	16.4	12.7	12.9	15.6	17	15.8
Custer County	16.4	15.6	20.2	18.5	19.5	18	19	17.5	17.6	15.4
Delaware County	16.9	15.9	19.1	21	20.2	19.9	18.9	22.8	20.9	20.9
Dewey County	12.9	11.4	14.1	14.5	14.9	12.9	14	14.1	12.6	12.7
Ellis County	11.9	11	12.9	13.2	12.7	12.4	12.1	13.9	12.8	11.4
Garfield County	14.1	13.4	14	17.1	15.6	16.7	15.8	15.7	15.3	14.6
Garvin County	15.8	15	16.6	18.7	16.6	15.6	18.3	16.3	18.2	20.4
Grady County	12.6	12.5	16.6	15	14.1	16.3	14.4	16.4	13.8	14.7
Grant County	13	12.3	14.6	14.5	15.1	13.6	12.9	12.8	13.3	12.1
Greer County	20.9	20.5	24.8	24.9	24.5	23.2	23.4	21.9	23.8	24.9
Harmon County	22.4	20.8	28.2	27.7	27.6	27.5	28.3	26.9	28	24.7
Harper County	10.1	9.2	10.6	10.8	10.6	10.3	10.4	11.5	11.8	10.1
Haskell County	18.2	17	21.8	21.5	16.9	20.3	19.9	17.5	20.2	23.1
Hughes County	19.5	19.7	27.2	23.6	25.7	24.3	21.7	25.9	25.1	23.4
Jackson County	15	14.7	19.8	17.9	17.9	17.2	17.6	16.9	18.7	16.5
Jefferson County	18.2	18	22	20.8	19.2	22.3	23.6	21.6	21.6	21.2
Johnston County	17.5	16.1	20.4	21.1	19.9	20.3	22.7	22.1	17.4	21.2
Kay County	15.9	15.5	18.1	16.5	18.1	17.2	17.7	17.5	18.1	18.6
Kingfisher County	10.5	9.6	10.4	11.3	10.8	11.8	10.2	11.9	11.5	10
Kiowa County	18.2	17.1	20.7	21.9	20.4	19.2	19.4	23.7	21	19.9
Latimer County	19	17.2	20.2	20.6	18.7	17.5	19.2	17.8	19.2	19.3
Lincoln County	14	13.4	14.6	15.7	16.4	14.2	15.9	14.2	17.9	17.5
Logan County	13.1	12.9	13	14.9	12.7	13.9	15.2	14.3	14.4	12.7
Love County	13.1	12.9	14.6	14.4	13.5	14.2	14.1	15.6	16.4	15.9
McClain County	10.9	9.8	11.5	10.6	10	10	11.5	11.3	14	10.9
McCurtain County	21.6	20.5	24.2	25.9	25.2	25.6	27	23.9	30.9	24.5
McIntosh County	18.2	17.1	20.6	21.4	19.6	20.8	22.7	20	24.5	22.5
Major County	11.2	10.1	12.8	11.6	11.1	9.8	10.6	12.4	12.1	12.2
Marshall County	15.1	14.2	16.9	17.6	16.5	17.1	14.5	17.9	17.7	19.7
Mayes County	15.4	14.8	15.6	15.6	16.8	17.3	16.2	18.1	18.5	21.5
Murray County	14.5	13.8	14.8	15.4	15.9	16.8	15.7	15.1	15.3	16
Muskogee County	17.8	17.2	19.9	19.1	16.8	19.7	21.4	20.6	24.1	21.9
Noble County	13.2	12.5	14.5	14	14.6	13.7	14.2	14.3	14.2	13.9
Nowata County	14.3	13.6	15.5	16.6	16.3	17.1	15.7	15.6	16.9	19.8
Okfuskee County	20.6	19.9	24.3	25.4	21.9	23.7	26.8	27.3	24.7	27.4
Okmulgee County	18.3	17.8	24.4	22.1	18.1	20.3	20.1	21.4	23.6	19.6
Osage County	13.2	12.6	15.5	14.8	13.3	13.1	14.7	16.5	18.2	15.4
Ottawa County	16.6	15.1	18.9	17.4	16.1	19.6	18.7	20.5	20.7	23.3
Pawnee County	14.1	13.4	16.1	16.4	16.1	15.8	15.5	16.5	16.2	15.7
Payne County	17.1	16.3	25.9	20.9	21.8	18.7	22	21.7	23.4	23.4
Pittsburg County	16.6	15.6	18.1	16	16.5	17.2	17.2	18.8	17.4	19.5
Pontotoc County	17	16.6	18.3	22.8	16.1	19.4	17.4	18	18.2	19.8
Pottawatomie County	15	15.4	18.6	18.1	18.8	16.5	16.8	18.5	18.5	18.9
Pushmataha County	20.1	19.1	24.1	24.4	22.4	25.8	24.8	23.9	26.4	24.5
Roger Mills County	12.5	9.6	12	11.7	12.7	11.5	11.3	13.2	13.2	11.7
Rogers County	9.4	9.1	8	10	9.8	10	9.5	9.8	10.1	10.1
Seminole County	21	20.5	24.2	23.9	22.8	22	24.5	24.1	21.3	23.2
Sequoyah County	18.2	17.6	20.6	22.6	19.2	20.7	22.1	19.7	20.8	22.8
Stephens County	14.3	13.5	15.9	15.5	14.3	13	13.8	15.5	15.3	15.2
Texas County	11.8	11.1	13.3	13.9	12.7	12.2	13.2	12.1	14.4	12.1
Tillman County	19.2	18.7	23.5	24.7	23.7	21.9	21.2	25.9	22.7	21.9
Wagoner County	10.1	10.2	10.7	12	11.1	11	9.1	11.5	12.8	10.9
Washington County	12.2	11.8	13.2	13.8	11.4	13.2	15.7	13.7	15.6	14.9
Washita County	15	13.7	15.7	16.2	15.3	14.9	15	15.3	14.2	15.5
Woods County	14.3	13.5	16.3	17.7	15.1	16.6	15.1	16.2	18.8	15.2
Woodward County	12.7	11.6	12.5	12.8	13.3	12.8	12.3	15.1	13.7	14.5

Use Tax	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	23772	27169	35065	47017	40802	66780	55798	51230	47805	71751
Alfalfa County	6664	7893	9090	23670	26092	51052	104184	29401	293064	588200
Atoka County	42133	42909	67006	60349	115495	184805	182052	137178	288424	115558
Beaver County	78032	84790	99677	128616	249453	138721	181185	135538	234777	332665
Beckham County	75806	94153	176614	193048	237122	167691	197217	106477	139539	207809
Blaine County			4669	46142	27036	26563	192854	52461	49450	136980
Bryan County			12585	45705	50896	61496	193562	123737	66456	69162
Caddo County	32040	57534	89428	97562	132799	136611	249203	186294	198168	290858
Canadian County							0	0	0	225896
Carter County	60241	128619	108968	116381	171604	313533	276153	199262	336794	285431
Cherokee County	61046	92713	137721	161669	264148	225231	252149	246252	234584	240296
Choctaw County	25964	50878	56802	57785	67813	84920	72521	139099	123239	303390
Cimarron County							0	0	0	
Cleveland County							0	218883	259947	286664
Coal County	40069	12059	17941	35151	166761	322798	283192	70301	158766	141492
Cotton County	8619	7090	12741	12429	31009	17639	18381	16856	19399	20524
Craig County	56185	70545	60168	78257	110647	109135	94567	92174	132098	106931
Creek County	144540	156613	206101	201285	290693	311499	266709	257004	245054	410804
Custer County	111683	71877	98491	146565	177579	297973	696151	317549	573405	787225
Delaware County	64588	105628	84627	103339	122576	105925	153152	154920	147028	153790
Dewey County	7188	7730	17163	24034	19442	46231	315698	106657	408494	529109
Ellis County							0	94736	500784	735383
Garfield County	44309	111205	117386	134420	149092	151796	160095	178048	197237	192201
Garvin County						76789	76514	65610	88755	130304
Grady County	30518	45197	39667	67926	61569	70445	152678	50749	135591	248745
Grant County	31155	25124	25268	30526	75382	80160	93427	126118	83688	477960
Greer County	4932	9824	5618	8452	16094	13406	14994	20083	23503	22184
Harmon County		0				6673	25850	30590	25288	19764
Harper County	24652	24611	31050	38293	99417	142384	89570	74272	62780	73290
Haskell County				50410	106212	141680	123267	110777	72936	75810
Hughes County							0	0	0	5220
Jackson County	25514	38688	49427	55385	56945	59554	64490	54650	64662	63380
Jefferson County	29029	26079	78241	35639	39314	25653	32193	43557	32528	37270
Johnston County	73373	97539	109522	196877	222399	162899	128165	144809	97074	259033
Kay County							0	0	0	149923
Kingfisher County	76314	61687	104849	136728	170376	233042	498789	289274	311576	196823
Kiowa County	3852	11289	18646	16237	24423	20488	13102	30335	18692	73283
Latimer County	78161	186201	267651	294728	411879	731243	384402	197389	98728	108200
Lincoln County	48270	66213	83698	154605	102263	180440	246478	218410	427545	252244
Logan County	325440	406096	497118	430805	356765	391516	272951	234145	217234	255520
Love County	25587	28758	33510	78244	60988	58524	163753	91391	80477	87664
McClain County	21174	38738	31999	6453	17544	69152	69173	52580	69127	74276
McCurtain County	70082	158784	153034	208427	227975	213227	266384	191982	184168	281298
McIntosh County		19937	30922	37928	82569	203422	59963	76054	120159	125136
Major County				17067	28873	57017	46018	17513	10130	12327
Marshall County	27398	28818	40880	63035	75622	81646	169551	88425	100514	101829
Mayes County	90337	100090	164280	167095	166514	431466	311961	285230	288525	253909
Murray County	52975	50114	59846	96720	108155	88888	124737	129941	128782	123457
Muskogee County					16704	133257	276077	271496	357654	344545
Noble County	12299	22789	20465	33560	61811	57413	73213	165173	18729	108463
Nowata County	12487	131942	15861	20391	25059	27363	43611	41257	42466	45429
Okfuskee County	10800	8543	10917	17075	26476	22815	33507	31681	25220	48570
Okmulgee County	44717	31429	58072	85945	92987	105306	107033	101245	129254	139967
Osage County	772782	752111	808513	859028	1298556	1294777	1018328	786921	915443	917659
Ottawa County	73673	84650	124961	147170	180102	279842	240168	229104	215223	314737
Pawnee County	18148	21153	64328	52201	100241	78282	70997	47600	91853	157625
Payne County	110155	107288	231089	216037	731254	754678	550192	618828	670579	873423
Pittsburg County				13716	327551	517569	909208	462371	425329	519878
Pontotoc County							0	16412	181922	234084
Pottawatomie County	254654	296612	336019	465151	628616	648726	653432	722999	809235	817744
Pushmataha County							4135	55352	74531	62857
Roger Mills County	292340	339081	295441	507097	465040	337458	641570	181636	254598	827456
Rogers County	325389	322072	407743	478083	729119	720949	864928	796279	672366	768177
Seminole County	28131	35126	27266	35893	63474	195311	137006	126358	116731	127259
Sequoyah County	64486	55602	69951	103320	143293	94259	108756	111579	205505	226439
Stephens County							0	0	0	
Texas County	98811	157271	172137	237687	416806	408699	513408	319643	318435	454191
Tillman County	10613	12898	13019	18388	16408	16664	23798	18175	21802	25164
Wagoner County	159237	372827	520908	703891	637269	632109	616708	666640	728763	1187510
Washington County		164990					0	1	0	0
Washita County	18591	38442	123926	223892	247423	331275	821058	532082	1227151	1018637
Woods County	11945	24182	53015	110305	116045	116662	139007	49357	68119	210034
Woodward County	20126	38297	61700	88346	113567	93140	96336	69592	194693	217282

Retail Tax	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	1414540	1377365	1457312	1718697	1870843	1926796	1981623	1955213	2093977	2051094
Alfalfa County	321120	344003	326524	322862	364323	381093	430465	427993	474687	564989
Atoka County	1285466	1237834	1282701	1377129	1724626	2268166	1978869	1715097	1769605	1928239
Beaver County	164300	171134	173485	193949	218096	210311	215021	230129	222102	249743
Beckham County	4978775	5689709	6552965	7388613	8348211	8913523	8996503	7544678	9267873	11170291
Blaine County	1035832	1159764	1289989	1288495	1346097	1384811	1442078	1382264	1483700	1859942
Bryan County	4879098	5517312	6515027	7287146	7974158	8498236	10380292	9879146	10132438	10680437
Caddo County	2888031	2928558	2998724	3027734	3038480	3328560	3477279	3368263	3321629	3574898
Canadian County	11806897	16083315	16949675	18099315	18975139	20452262	22794532	22450265	23667500	24832542
Carter County	9478401	10640262	11067172	11490893	12971333	14751201	14770642	13906466	14865027	15713932
Cherokee County	4468675	4164982	4821482	4901663	5090101	5344223	5403570	5019001	5444079	5633796
Choctaw County	1895535	2228086	9131751	2238058	2335587	2431949	2549050	2418784	2368091	2440759
Cimarron County	235124	240077	227375	259351	214674	251923	257449	249679	294157	275045
Cleveland County	39605485	46081706	44944590	47061893	46458073	50404047	57057800	58844788	61816843	61855630
Coal County	325410	316524	294812	307212	382861	514049	484068	430809	442103	465430
Cotton County	298862	294796	295486	303292	325628	346816	353909	349205	352682	362645
Craig County	1873138	2105699	2183894	2226361	2277755	2351641	2381744	2268196	2326287	2466349
Creek County	9288790	9362325	10160469	10810060	11501057	12067267	11456801	11050501	11839366	12114917
Custer County	5383539	5520512	7319086	7029877	7384417	8093113	8318715	8021163	8542498	9802314
Delaware County	4458512	5066904	5174197	5278325	5529645	5773791	5852790	5788640	5876422	6221932
Dewey County	273792	362952	438724	408018	411749	476695	484809	407218	602469	575472
Ellis County	237005	286074	286610	288194	325464	412158	439507	375373	468362	574412
Garfield County	13954995	14605517	15134378	15583968	16570453	17478888	18274121	17297423	17839795	19554555
Garvin County	3882677	4019650	4260846	4472184	4600465	5324833	5463538	5125437	5351506	5863331
Grady County	5649639	5860948	6056520	6499825	7521918	8054061	8219241	7683981	8043034	8722652
Grant County	246039	274842	275608	277119	286596	287088	308336	305305	306354	391465
Greer County	347638	370486	368408	403922	416051	406441	444631	429261	432936	452553
Harmon County	133890	139291	148672	135722	156961	147971	146890	138857	141347	141756
Harper County	223879	232326	309551	248732	260240	288997	341944	320735	337277	322578
Haskell County	1136667	1165905	1212846	1192348	1284706	1513670	1591593	1494547	1484964	1508712
Hughes County	1438787	1470511	1492116	1770421	1888308	2102522	2126384	2066977	2079317	2182901
Jackson County	4883938	5067113	5030054	5054401	5238763	5496175	5995417	6774873	6945285	7366310
Jefferson County	342212	325420	323148	341317	344754	358312	365812	381923	373021	366066
Johnston County	354024	393545	381052	390206	460547	588340	735561	699460	703390	772411
Kay County	9893048	9298556	12494133	10773160	10655480	11081861	11447557	10752696	11392166	12004267
Kingfisher County	1562212	1615525	1790965	1832721	1836329	2134070	2429485	2376358	2519873	2879265
Kiowa County	1011307	980185	943880	1003509	1043168	1123671	1155200	1150217	1157374	1222025
Latimer County	583956	575952	603071	632987	737623	771878	785603	797718	1001492	997794
Lincoln County	2786884	2774154	2818349	2818741	2989498	3346511	3668843	3670295	3796140	4167873
Logan County	2292998	2939777	2388592	2430668	2469097	2923415	3637808	3002251	3076611	3457593
Love County	348748	356788	343748	375740	428953	375321	491747	442499	433382	446636
McClain County	4040049	4471450	9358507	6602620	7408468	8197405	8449906	8317524	8461087	9292988
McCurtain County	3397244	2187635	3624290	3665688	3847339	4006266	4163543	4126446	4183395	4429678
McIntosh County	2770651	2875062	2901783	2990825	3136091	3598406	4297614	4169607	4347832	4503305
Major County	744355	836229	840602	872203	959036	1029794	1089152	1017978	1048646	1182795
Marshall County	1441356	1495241	1529502	1613081	1696357	1786881	1830081	2017754	2176833	2360415
Mayes County	5489878	5682405	5822642	6590419	7037309	7744115	7804675	7467637	7491023	7827854
Murray County	1310007	1391432	1391408	1439472	1513151	1634874	1841727	2070562	2228192	2358383
Muskogee County	12235147	13803251	17150358	18351862	19127259	18775342	17084917	17728481	18893514	20023390
Noble County	1126902	1152059	1146600	1055595	1048760	1124921	1212072	1144860	1254007	1310421
Nowata County	526020	556665	534444	501456	556055	556539	525531	533336	514587	554448
Okfuskee County	643611	735367	760134	770821	821003	851231	909417	881833	913136	993252
Okmulgee County	6383728	6585614	6309224	6490619	6635402	6886451	7040900	6668261	6693800	6750010
Osage County	2207825	2893305	2431063	2873471	3138928	3357653	3470238	3211660	3292381	3461030
Ottawa County	3636627	3675867	3814614	3813684	3919176	4206875	4182452	4043767	4589154	5077154
Pawnee County	1484821	1462398	1421869	1490318	1533458	1599974	1666319	1670016	1619144	2018694
Payne County	14843172	15607573	16921239	18122157	19046508	20492215	21283327	20521147	21426262	22810640
Pittsburg County	8203229	9279811	9580785	10434497	11269172	12272982	12272175	10697604	10936838	11182644
Pontotoc County	8475490	8932149	8673926	9614956	10072109	10764475	10801077	10404813	10493301	11084731
Pottawatomie County	10496935	10715238	11224560	11600321	11992595	12873662	13045248	12809826	13707139	13965802
Pushmataha County	780625	804137	804984	797810	911645	941035	1009235	1007936	1056138	1105905
Roger Mills County	140895	148949	166175	190075	217293	194614	229916	203403	208819	242783
Rogers County	8068857	9063440	9249938	9509157	9852600	10535138	10853913	10288485	10414034	11013982
Seminole County	3234829	3822578	3708525	3778684	3920442	4298389	4304251	4123627	4292805	4417041
Sequoyah County	4381049	4466847	4761173	4793219	5531273	5763748	5835039	5595014	5379144	5463154
Stephens County	7280490	7874732	8085731	8360654	8866447	9317839	9565031	8981848	9236598	9833593
Texas County	2603111	2656828	3292768	1934916	2149667	3322289	4579366	4457763	4758096	5145191
Tillman County	513670	537429	572067	573855	589728	624294	636723	607570	597697	662526
Wagoner County	2970338	4397723	3055454	3149023	3252115	3649202	4404182	4166696	4077720	4206459
Washington County	10647990	10545243	11008502	11344226	11779128	12376572	12323218	11553235	12023224	12467817
Washita County	601739	618767	650670	663407	745588	816942	866375	799223	812135	1366023
Woods County	1464983	1577609	1951128	2220249	2300093	2492126	2651222	2582594	2597471	3067721
Woodward County	4892591	5316451	5511927	5807123	6686167	7077794	7125137	6215722	6874725	7821140

Oil Completions	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011
Adair County	0	0	0	0	0	0	0	0	0
Alfalfa County	1	3	4	12	12	18	2	70	88
Atoka County	0	0	0	1	1	0	0	0	0
Beaver County	9	10	9	15	15	10	9	61	57
Beckham County	0	2	5	9	9	5	1	12	14
Blaine County	3	6	9	3	3	5	5	5	13
Bryan County	1	0	0	1	1	1	2	1	0
Caddo County	12	16	23	24	24	13	18	12	10
Canadian County	6	9	22	24	24	10	8	17	27
Carter County	19	26	57	60	60	111	97	160	160
Cherokee County	0	0	0	0	0	0	0	0	0
Choctaw County	0	0	0	0	0	0	0	0	0
Cimarron County	0	0	1	6	6	1	1	1	0
Cleveland County	1	6	5	3	3	7	3	4	2
Coal County	1	4	0	0	0	2	1	2	5
Cotton County	0	1	0	1	1	0	12	23	9
Craig County	0	0	0	0	0	3	1	6	4
Creek County	9	2	6	16	16	23	16	56	56
Custer County	2	4	3	4	4	3	5	12	12
Delaware County	0	0	0	0	0	0	0	0	0
Dewey County	14	12	7	4	4	14	9	33	24
Ellis County	10	11	13	13	13	43	16	111	112
Garfield County	6	4	6	11	11	10	13	30	23
Garvin County	47	25	29	50	50	52	29	72	41
Grady County	21	6	31	26	26	9	15	32	13
Grant County	8	5	9	9	9	16	15	73	79
Greer County	0	0	0	0	0	0	1	0	0
Harmon County	0	0	0	0	0	0	0	0	0
Harper County	2	8	5	9	9	26	10	26	21
Haskell County	0	1	1	0	0	0	0	0	0
Hughes County	5	0	11	10	10	12	8	8	2
Jackson County	1	0	0	0	0	2	1	3	3
Jefferson County	6	11	13	11	11	0	4	15	9
Johnston County	0	0	0	3	3	3	9	2	3
Kay County	3	8	22	16	16	44	28	81	40
Kingfisher County	5	4	16	20	20	20	30	46	40
Kiowa County	0	0	0	0	0	0	0	0	0
Latimer County	0	0	0	0	0	0	0	0	0
Lincoln County	5	9	10	9	9	9	4	16	9
Logan County	9	8	9	18	18	8	10	29	15
Love County	1	2	5	0	0	2	4	37	36
McClain County	6	9	18	28	28	68	18	22	45
McCurtain County	0	0	0	0	0	5	0	12	0
McIntosh County	0	0	0	0	0	0	0	0	0
Major County	18	17	21	27	27	19	27	40	6
Marshall County	6	0	0	4	4	0	8	0	15
Mayes County	0	0	0	0	0	0	0	0	0
Murray County	2	0	1	5	5	7	0	6	2
Muskogee County	1	0	2	2	2	2	2	1	0
Noble County	25	29	28	53	53	44	38	48	38
Nowata County	2	1	8	28	28	16	0	93	50
Okfuskee County	1	3	4	11	11	9	9	13	4
Okmulgee County	7	1	10	15	15	23	9	23	6
Osage County	0	0	0	0	0	0	0	0	0
Ottawa County	0	0	0	0	0	0	0	0	0
Pawnee County	1	0	2	6	6	6	11	58	15
Payne County	12	6	8	10	10	10	10	46	30
Pittsburg County	0	1	1	1	1	0	0	0	0
Pontotoc County	37	24	36	27	27	20	25	91	108
Pottawatomie County	5	9	4	9	9	7	18	42	27
Pushmataha County	0	0	0	0	0	0	0	0	0
Roger Mills County	3	5	3	9	9	7	5	52	86
Rogers County	1	0	3	2	2	20	17	15	8
Seminole County	12	21	20	27	27	34	32	77	29
Sequoyah County	0	0	0	0	0	0	0	0	0
Stephens County	41	65	103	69	69	105	33	55	33
Texas County	13	39	26	37	37	47	11	19	12
Tillman County	1	2	2	1	1	4	5	15	7
Wagoner County	0	0	1	6	6	12	7	10	2
Washington County	0	3	12	22	22	18	25	39	11
Washita County	2	1	4	1	1	9	6	23	14
Woods County	3	12	20	24	24	76	41	77	57
Woodward County	8	9	9	13	13	8	7	3	2

Gas Completions	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011
Adair County	0	0	0	0	0	0	0	0	0
Alfalfa County	4	5	7	11	11	24	9	26	31
Atoka County	0	3	4	16	16	42	11	6	1
Beaver County	62	61	68	70	70	80	24	13	4
Beckham County	53	47	87	114	114	44	20	34	19
Blaine County	37	32	44	39	39	16	23	57	99
Bryan County	1	4	1	8	8	1	2	0	0
Caddo County	49	50	65	61	61	44	29	39	24
Canadian County	34	40	45	50	50	62	70	86	70
Carter County	6	0	3	5	5	12	23	21	17
Cherokee County	0	0	0	0	0	0	0	0	0
Choctaw County	0	0	0	0	0	0	0	0	0
Cimarron County	1	8	10	8	8	7	1	1	0
Cleveland County	0	0	1	1	1	0	0	2	1
Coal County	14	6	18	44	44	74	88	55	40
Cotton County	0	1	0	0	0	0	0	0	0
Craig County	11	6	2	0	0	1	0	2	0
Creek County	0	4	11	6	6	12	3	6	1
Custer County	51	44	43	46	46	43	18	15	16
Delaware County	0	0	0	0	0	0	0	0	0
Dewey County	32	21	32	22	22	17	9	48	76
Ellis County	43	31	41	67	67	43	32	38	16
Garfield County	5	5	5	15	15	9	4	4	1
Garvin County	8	11	13	17	17	17	11	15	12
Grady County	27	40	52	71	71	44	19	19	14
Grant County	26	17	14	28	28	9	5	7	11
Greer County	0	0	0	3	3	0	0	0	0
Harmon County	0	0	0	0	0	0	0	0	0
Harper County	28	18	21	22	22	39	16	14	4
Haskell County	112	89	76	81	81	16	13	10	1
Hughes County	22	15	55	61	61	165	64	40	19
Jackson County	0	0	0	0	0	0	0	0	0
Jefferson County	0	0	0	0	0	0	0	2	0
Johnston County	0	0	0	0	0	0	11	0	0
Kay County	1	2	2	7	7	3	5	8	18
Kingfisher County	16	16	20	24	24	20	12	13	9
Kiowa County	0	3	5	1	1	2	3	3	1
Latimer County	58	57	88	100	100	89	46	18	3
Lincoln County	18	9	12	25	25	41	12	19	20
Logan County	29	22	14	7	7	10	3	7	3
Love County	1	0	2	1	1	1	0	0	0
McClain County	2	4	11	6	6	7	3	16	1
McCurtain County	0	0	0	0	0	0	0	7	0
McIntosh County	22	28	46	81	81	67	3	11	2
Major County	24	43	65	70	70	99	30	7	2
Marshall County	1	2	5	11	11	7	8	0	7
Mayes County	0	0	0	0	0	3	0	12	0
Murray County	0	1	0	0	0	0	0	0	0
Muskogee County	1	2	4	7	7	2	0	2	0
Noble County	12	7	29	22	22	17	13	8	0
Nowata County	66	39	66	105	105	27	8	33	66
Okfuskee County	6	5	4	13	13	7	14	15	10
Okmulgee County	12	5	5	15	15	3	10	6	2
Osage County	0	0	0	0	0	0	0	0	0
Ottawa County	0	0	0	0	0	0	0	0	0
Pawnee County	2	0	1	0	0	0	1	3	1
Payne County	2	7	8	7	7	7	0	0	1
Pittsburg County	134	157	179	186	186	182	110	184	119
Pontotoc County	4	2	6	1	1	0	0	0	0
Pottawatomie County	8	17	16	12	12	1	5	3	1
Pushmataha County	0	0	2	6	6	4	3	1	0
Roger Mills County	91	101	212	204	204	88	40	21	17
Rogers County	16	17	35	51	51	4	3	11	1
Seminole County	6	5	15	25	25	16	19	36	37
Sequoyah County	2	1	3	8	8	13	3	0	1
Stephens County	13	30	45	57	57	26	12	3	2
Texas County	92	96	93	81	81	30	17	14	4
Tillman County	0	0	0	0	0	0	0	0	0
Wagoner County	0	0	0	19	19	83	15	11	4
Washington County	57	41	124	126	126	36	28	19	4
Washita County	36	54	45	56	56	79	50	91	46
Woods County	42	64	72	90	90	145	80	42	13
Woodward County	90	104	194	192	192	138	44	8	1

Unemployment	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	8.0	6.3	4.9	4.5	4.8	4.9	8.3	8.4	7.0	7.0
Alfalfa County	4.1	3.9	4.4	4.3	4.4	3.1	5.1	5.4	4.6	3.2
Atoka County	7.3	6.4	5.3	5.0	5.4	4.6	8.6	8.5	7.0	5.5
Beaver County	3.9	3.5	3.3	2.7	2.7	2.1	3.6	3.5	3.1	2.5
Beckham County	3.8	3.3	3.1	2.7	2.4	2.3	6.1	5.2	3.3	2.6
Blaine County	5.0	4.7	4.9	4.3	4.2	3.7	5.9	7.4	5.8	4.4
Bryan County	4.7	4.1	3.8	3.6	3.5	3.5	5.5	5.4	5.2	4.7
Caddo County	5.5	5.7	5.7	5.7	5.0	4.1	6.4	6.5	6.5	5.4
Canadian County	4.8	4.1	3.7	3.5	3.8	3.4	5.8	5.6	4.8	4.2
Carter County	4.9	4.8	4.4	3.9	3.4	3.2	5.8	5.5	4.9	4.2
Cherokee County	5.5	4.7	4.4	4.3	4.1	3.8	5.6	5.9	5.5	5.3
Choctaw County	7.9	7.2	5.7	5.1	5.3	5.1	7.3	7.5	7.3	6.6
Cimarron County	3.8	3.1	3.5	3.4	3.8	3.0	4.0	3.8	3.7	3.6
Cleveland County	4.3	3.8	3.8	3.6	3.7	3.4	5.6	5.7	4.9	4.4
Coal County	12.4	10.6	7.1	6.0	6.2	4.9	8.9	8.0	7.2	5.9
Cotton County	4.6	4.1	3.8	3.3	2.7	2.8	4.6	5.4	5.1	4.7
Craig County	5.8	4.9	4.5	4.4	4.6	3.8	5.9	6.1	5.7	5.1
Creek County	6.9	5.9	5.7	4.3	4.4	4.3	8.3	8.7	6.9	6.0
Custer County	3.7	3.3	3.2	3.1	3.0	2.7	4.8	4.9	3.8	3.3
Delaware County	5.8	5.2	4.7	4.6	4.6	4.2	6.7	7.0	6.2	5.6
Dewey County	3.7	3.2	3.4	3.1	3.1	2.4	4.5	4.3	3.2	2.6
Ellis County	3.0	2.8	3.0	2.8	2.5	2.2	4.8	4.4	3.1	2.3
Garfield County	4.2	3.7	3.6	3.1	2.9	2.6	4.6	4.9	3.9	3.5
Garvin County	5.0	4.3	4.1	3.7	3.3	3.0	5.9	6.2	4.7	4.0
Grady County	4.9	4.6	4.6	5.0	4.4	4.0	7.5	6.8	5.6	5.0
Grant County	3.8	3.6	3.7	3.8	3.3	2.5	3.9	4.2	3.5	3.2
Greer County	6.9	6.5	5.7	5.0	4.9	4.3	8.0	8.7	7.3	6.2
Harmon County	4.1	3.6	3.9	3.6	3.5	3.4	5.6	5.5	5.1	4.3
Harper County	3.7	3.1	3.0	3.2	2.8	2.3	4.1	4.2	3.5	2.9
Haskell County	6.7	5.6	4.6	4.3	4.1	3.8	8.0	7.8	6.9	6.8
Hughes County	9.6	8.7	7.3	6.2	6.1	5.4	10.6	10.7	9.2	8.0
Jackson County	3.8	3.9	3.9	3.4	3.4	3.2	5.2	5.5	5.1	4.7
Jefferson County	6.5	6.0	5.2	4.5	4.9	4.2	8.6	8.1	6.7	5.4
Johnston County	5.4	5.9	4.7	4.4	4.3	4.3	7.8	7.7	6.2	5.4
Kay County	6.9	6.2	5.7	4.9	4.2	3.5	7.8	8.4	6.9	6.3
Kingfisher County	3.4	3.3	3.3	2.8	2.6	2.3	4.6	4.8	3.7	3.2
Kiowa County	5.0	4.7	4.7	4.8	4.4	3.8	6.5	6.4	5.4	4.9
Latimer County	6.8	5.9	5.7	5.1	5.0	4.3	11.2	10.5	10.4	8.8
Lincoln County	5.5	5.0	4.8	4.2	4.2	4.0	7.4	6.8	5.7	5.1
Logan County	4.4	4.0	3.9	3.8	3.9	3.6	5.9	6.1	5.0	4.4
Love County	5.0	6.2	4.3	3.6	3.1	2.9	5.4	5.0	4.4	3.7
McClain County	3.6	3.3	3.3	2.9	2.8	2.4	4.7	4.6	3.6	3.2
McCurtain County	5.0	5.0	4.9	4.2	4.4	4.1	8.5	7.2	6.0	5.7
McIntosh County	7.7	6.1	5.0	4.4	4.3	4.2	8.9	8.8	7.6	6.1
Major County	4.9	4.5	4.2	3.8	3.8	3.6	5.9	6.1	5.1	4.4
Marshall County	9.2	7.7	6.7	6.3	6.4	6.6	10.9	10.8	9.6	8.8
Mayes County	7.7	6.9	5.9	5.3	5.4	4.8	8.3	9.1	8.6	8.0
Murray County	5.3	4.6	3.8	3.1	2.9	2.7	4.4	4.4	3.5	3.2
Muskogee County	7.3	7.1	6.0	5.3	5.5	4.7	7.9	8.0	7.2	6.4
Noble County	4.4	4.0	3.9	3.6	3.4	3.3	8.0	6.2	4.6	4.0
Nowata County	6.3	5.9	5.2	4.7	5.0	4.3	9.1	8.9	7.6	6.4
Okfuskee County	8.4	8.8	7.2	5.7	5.0	4.1	8.4	9.3	8.2	7.2
Okmulgee County	7.9	7.3	6.4	5.6	5.5	5.3	9.5	10.2	9.4	7.7
Osage County	6.3	5.4	4.8	4.3	4.2	4.2	7.9	8.0	7.2	6.1
Ottawa County	7.5	6.0	5.1	4.8	4.9	4.2	6.5	6.4	5.8	5.9
Pawnee County	6.9	5.9	5.0	4.3	4.5	4.5	8.9	9.5	7.9	6.4
Payne County	4.2	4.0	4.0	3.7	3.7	3.9	6.4	6.0	5.2	4.8
Pittsburg County	6.5	5.7	4.9	4.2	3.9	3.2	6.4	6.6	5.8	5.4
Pontotoc County	5.1	6.0	4.4	3.7	3.6	3.2	5.6	5.4	4.7	4.3
Pottawatomie County	5.9	5.6	5.3	4.6	4.2	3.9	6.6	6.5	5.5	4.8
Pushmataha County	7.5	6.5	5.1	4.4	4.9	4.8	8.7	8.4	7.2	6.0
Roger Mills County	2.8	2.8	2.8	2.7	2.7	2.3	4.7	4.0	2.7	2.4
Rogers County	5.8	4.6	4.0	3.8	3.8	3.5	7.2	7.4	6.2	5.4
Seminole County	9.1	10.0	7.0	5.8	5.5	4.5	9.0	8.7	7.4	6.8
Sequoyah County	6.8	6.2	5.5	5.6	5.8	5.9	9.9	10.2	9.3	8.5
Stephens County	5.2	4.7	4.0	3.6	3.7	3.5	7.7	7.0	5.2	4.4
Texas County	3.6	3.4	3.7	3.4	3.2	2.7	5.4	5.5	5.0	4.7
Tillman County	4.7	4.8	4.9	4.4	4.7	4.1	7.3	6.1	5.7	4.7
Wagoner County	5.6	4.8	4.1	3.7	3.8	3.6	6.8	7.1	6.2	5.4
Washington County	5.4	5.1	4.2	3.5	3.5	3.0	5.7	5.8	4.9	4.1
Washita County	3.8	3.4	3.4	3.4	3.0	2.7	5.9	5.3	3.9	3.4
Woods County	9.7	7.2	6.9	5.7	5.9	2.8	4.4	4.3	3.6	2.9
Woodward County	4.5	3.7	3.4	2.7	2.6	2.2	6.5	5.8	3.8	2.8

Population	x2003	x2004	x2005	x2006	x2007	x2008	x2009	x2010	x2011	x2012
Adair County	21445	21589	21887	22215	22345	22346	22477	22720	22489	22254
Alfalfa County	5827	5785	5706	5639	5618	5618	5585	5630	5642	5667
Atoka County	13973	14046	14034	14013	14118	14220	14155	14143	14133	14023
Beaver County	5609	5577	5569	5514	5571	5521	5562	5648	5638	5609
Beckham County	19663	18580	19151	20040	21855	22817	22369	22043	22335	23191
Blaine County	11196	12277	12264	11965	12010	12019	11896	9905	9684	9786
Bryan County	37260	37887	38309	39739	40350	41453	41859	42656	43150	43485
Caddo County	29550	29470	29202	29087	27932	28612	29459	29675	29618	29680
Canadian County	93449	96101	99176	102876	106804	109969	113186	116332	119478	122612
Carter County	45854	46218	46169	46430	46582	46910	47421	47618	47955	48035
Cherokee County	44066	44437	44805	45517	45546	46217	46492	47146	47734	48049
Choctaw County	15236	15292	15244	15277	15210	15112	15127	15228	15245	15192
Cimarron County	2822	2707	2610	2572	2530	2449	2495	2456	2479	2394
Cleveland County	221714	225447	229743	237257	241409	246790	251803	256918	261499	265675
Coal County	5925	5880	5743	5671	5718	5745	5962	5903	5952	5951
Cotton County	6386	6341	6390	6327	6280	6165	6179	6179	6167	6154
Craig County	14736	14739	14896	14881	14978	14910	14914	15066	14967	14726
Creek County	68094	67843	67715	67791	68292	68817	69535	70133	70509	70583
Custer County	25554	25631	25876	26148	26356	26816	27284	27491	27756	28554
Delaware County	38634	38998	39277	40266	40984	41018	41290	41524	41373	41405
Dewey County	4601	4685	4611	4621	4660	4737	4770	4817	4762	4805
Ellis County	3979	3998	3983	3898	3982	4043	4127	4155	4054	4096
Garfield County	57230	57459	57358	57723	58153	58845	59989	60733	60595	61198
Garvin County	27068	26942	27089	27249	27399	27529	27582	27526	27348	27259
Grady County	47277	48167	49256	50462	50931	51621	52231	52481	52766	53110
Grant County	4939	4789	4771	4645	4633	4598	4484	4537	4548	4515
Greer County	5942	6031	6082	6048	6160	6200	6273	6203	6162	6079
Harmon County	2984	2936	2953	2915	2829	2827	2861	2917	2926	2898
Harper County	3412	3465	3458	3527	3522	3645	3654	3690	3699	3693
Haskell County	12002	12129	12175	12329	12411	12620	12772	12752	12729	12939
Hughes County	13752	13660	13595	13450	13456	13397	13705	14010	13846	13808
Jackson County	27242	27480	26862	26805	26335	26038	26256	26471	26382	26205
Jefferson County	6528	6498	6483	6418	6385	6408	6521	6453	6482	6399
Johnston County	10526	10459	10431	10709	10779	10772	10838	10999	11088	10994
Kay County	47363	46903	46469	46220	46461	46410	46814	46436	45947	45779
Kingfisher County	14151	14223	14390	14464	14705	14748	14901	15054	15120	14994
Kiowa County	9965	9885	9955	9756	9543	9518	9445	9430	9405	9326
Latimer County	10689	10763	10796	10841	10875	11068	11155	11142	11103	10995
Lincoln County	32672	32875	33011	33441	33636	33710	34027	34317	34295	34201
Logan County	35922	35842	36501	37060	38709	39964	41116	42037	43088	43692
Love County	8916	9044	9159	9207	9252	9291	9340	9433	9383	9582
McClain County	28814	29350	30322	31419	32470	33107	33822	34724	35122	35598
McCurtain County	33625	33282	33235	33198	33128	33112	33002	33184	33254	33208
McIntosh County	19582	19597	19595	19730	19952	19952	20160	20284	20310	20545
Major County	7429	7423	7379	7449	7465	7456	7557	7505	7607	7667
Marshall County	13809	14149	14686	14988	15318	15482	15652	15844	15900	15916
Mayes County	39030	39331	39670	40107	40569	40984	41093	41297	41259	41096
Murray County	12707	12681	12803	12969	12966	13144	13373	13512	13605	13655
Muskogee County	69666	69592	69806	69958	70119	70050	70677	71098	70704	70501
Noble County	11462	11475	11477	11462	11460	11537	11536	11556	11561	11546
Nowata County	10802	10629	10666	10705	10771	10788	10595	10513	10627	10609
Okfuskee County	11912	11925	11867	11895	11981	12008	12094	12224	12300	12346
Okmulgee County	39732	39731	39569	39426	39552	39379	39817	40104	39791	39584
Osage County	45680	45874	46335	46576	47185	47336	47445	47440	48180	47948
Ottawa County	32495	32530	32655	32971	32441	31838	31883	31865	31901	32252
Pawnee County	16677	16547	16565	16625	16611	16447	16559	16607	16792	16488
Payne County	71879	72244	72578	74964	74164	75000	76859	77418	77860	78282
Pittsburg County	43983	44029	44412	44831	45062	45450	45887	45805	45657	45035
Pontotoc County	35048	35097	35267	35525	36157	36687	37283	37586	37695	37942
Pottawatomie County	67201	67072	67264	67696	68698	68752	69002	69640	70215	70706
Pushmataha County	11464	11470	11361	11389	11468	11493	11574	11586	11409	11229
Roger Mills County	3226	3308	3385	3387	3438	3557	3615	3638	3799	3764
Rogers County	77288	79069	80313	82234	84030	85390	86577	87022	87696	88313
Seminole County	24584	24801	24878	24997	25030	25198	25428	25450	25450	25463
Sequoyah County	39905	40412	40634	41248	41560	41825	42208	42396	41952	41396
Stephens County	42725	43061	43318	43670	44196	44508	44799	45090	45057	44778
Texas County	19469	19693	19408	19361	19258	19539	20128	20813	21209	21555
Tillman County	8802	8668	8464	8394	8271	8112	8016	7981	7980	7801
Wagoner County	61700	62800	64165	66345	68677	70646	72143	73393	74098	75050
Washington County	49004	48997	48885	49216	50038	50641	50754	51087	51536	51692
Washita County	11204	11202	11228	11422	11555	11595	11664	11594	11591	11629
Woods County	8729	8676	8679	8550	8593	8533	8708	8891	8758	8846
Woodward County	18594	18935	19122	19341	19939	20120	20467	19986	20095	20647

Appendix B contains the STATA printout for each model used in this study (shown in Table 4 & 5).

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.6061 — Obs per group: min = 9
between = 0.8994 — avg = 9.0
overall = 0.8951 — max = 9

F(19,72) = 38.97
corr(u_i, Xb) = 0.5893 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnretail	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-.7748909	.5761176	-1.35	0.183	-1.92336	.3735786
lnoilvalue	.002678	.0017943	1.49	0.140	-.0008989	.0062549
lnoilspace	-.0014004	.0050854	-0.28	0.784	-.011538	.0087372
oilcomp	-.000025	.0004475	-0.06	0.956	-.0009171	.000867
lngasvalue	-.0012384	.0024205	-0.51	0.610	-.0060636	.0035869
lngasspace	.0261337	.0218836	1.19	0.236	-.0174904	.0697579
gascomp	.000385	.0002285	1.69	0.096	-.0000704	.0008404
lnmhi	.3060861	.1498213	2.04	0.045	.0074228	.6047493
lnpop	1.012597	.2139608	4.73	0.000	.5860736	1.43912
unemploy	-.004737	.0078653	-0.60	0.549	-.0204162	.0109422
pov	.0039668	.0045605	0.87	0.387	-.0051244	.013058
year						
2004	.0465333	.0127133	3.66	0.000	.0211899	.0718768
2005	.0806872	.0264742	3.05	0.003	.0279119	.1334626
2006	.0609848	.0269906	2.26	0.027	.0071801	.1147895
2007	.0984807	.033934	2.90	0.005	.0308344	.1661269
2008	.151275	.0379648	3.98	0.000	.0755935	.2269564
2009	.2351913	.0386784	6.08	0.000	.1580874	.3122953
2010	.1854303	.0434704	4.27	0.000	.0987736	.272087
2011	.22046	.0484866	4.55	0.000	.1238038	.3171162
_cons	.8038018	2.813399	0.29	0.776	-4.804607	6.412211
sigma_u	.54238052					
sigma_e	.10213278					
rho	.96575562	(fraction of variance due to u_i)				

Fixed-effects (within) regression Number of obs = 657
Group variable: county1 Number of groups = 73

R-sq: within = 0.2216 Obs per group: min = 9
between = 0.0141 avg = 9.0
overall = 0.0073 max = 9

F(19,72) = 3.44
corr(u_i, Xb) = -0.2959 Prob > F = 0.0001

(Std. Err. adjusted for 73 clusters in county1)

lnuse	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	11.08129	17.16192	0.65	0.521	-23.13037	45.29294
lnoilvalue	.042596	.036521	1.17	0.247	-.0302073	.1153993
lnoilspace	.0285767	.0763666	0.37	0.709	-.1236573	.1808108
oilcomp	.0067764	.0167625	0.40	0.687	-.026639	.0401919
lngasvalue	-.0495807	.0275115	-1.80	0.076	-.1044238	.0052625
lngasspace	.3582259	.4053766	0.88	0.380	-.4498775	1.166329
gascomp	.003381	.0062067	0.54	0.588	-.0089919	.0157539
lnmhi	5.68169	3.295224	1.72	0.089	-.8872185	12.2506
lnpop	-.8038656	4.312247	-0.19	0.853	-9.400173	7.792442
unemploy	-.0525873	.1405345	-0.37	0.709	-.3327378	.2275632
pov	.0715538	.0813928	0.88	0.382	-.0906998	.2338075
year						
2004	.2878779	.2728196	1.06	0.295	-.255978	.8317337
2005	.0074199	.3419558	0.02	0.983	-.6742566	.6890964
2006	.3024941	.5378259	0.56	0.576	-.7696423	1.374631
2007	.394161	.7168348	0.55	0.584	-1.034823	1.823145
2008	.4567643	.9388282	0.49	0.628	-1.414756	2.328284
2009	1.298147	.9468048	1.37	0.175	-.5892739	3.185568
2010	1.353443	1.068553	1.27	0.209	-.7766774	3.483564
2011	1.393047	1.021684	1.36	0.177	-.6436439	3.429737
_cons	-50.71805	56.5486	-0.90	0.373	-163.4456	62.00952
sigma_u	4.0840254					
sigma_e	2.1245145					
rho	.78702407	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.0932 — Obs per group: min = 9
between = 0.0758 — avg = 9.0
overall = 0.0160 — max = 9

F(19,72) = 13.99
corr(u_i, Xb) = -0.8705 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lncre	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	3.156695	2.370522	1.33	0.187	-1.568853	7.882244
lnoilvalue	.0244327	.0160134	1.53	0.131	-.0074893	.0563548
lnoilspace	-.0820444	.0554397	-1.48	0.143	-.1925615	.0284726
oilcomp	.0012744	.0007858	1.62	0.109	-.0002921	.002841
lngasvalue	.033227	.0227027	1.46	0.148	-.0120301	.0784841
lngasspace	.0202335	.0313047	0.65	0.520	-.0421714	.0826383
gascomp	.0009028	.0005239	1.72	0.089	-.0001416	.0019472
lnmhi	-1.354926	1.13719	-1.19	0.237	-3.621873	.9120217
lnpop	-.8739353	.7634951	-1.14	0.256	-2.395935	.6480643
unemploy	.0259993	.0220767	1.18	0.243	-.0180098	.0700085
pov	.036543	.0473577	0.77	0.443	-.0578629	.1309489
year						
2004	-.0584187	.1008177	-0.58	0.564	-.2593951	.1425577
2005	-.093206	.2030359	-0.46	0.648	-.4979507	.3115388
2006	.1525664	.0867967	1.76	0.083	-.0204596	.3255924
2007	.3994605	.1966793	2.03	0.046	.0073876	.7915334
2008	.5326372	.2687606	1.98	0.051	-.0031273	1.068402
2009	.4737213	.1530085	3.10	0.003	.1687044	.7787381
2010	.4805437	.1732713	2.77	0.007	.1351337	.8259538
2011	.5791026	.2525663	2.29	0.025	.0756209	1.082584
_cons	36.8999	17.86504	2.07	0.042	1.286596	72.51321
sigma_u	1.3296794					
sigma_e	.74023169					
rho	.76340879	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.3618 — Obs per group: min = 9
between = 0.8739 — avg = 9.0
overall = 0.8574 — max = 9

F(19,72) = 11.79
corr(u_i, Xb) = 0.6010 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic52	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-.7455966	1.265726	-0.59	0.558	-3.268775	1.777582
lnoilvalue	.002718	.0030538	0.89	0.376	-.0033697	.0088058
lnoilspace	-.0007781	.0055035	-0.14	0.888	-.0117492	.010193
oilcomp	.0005691	.0008572	0.66	0.509	-.0011396	.0022778
lngasvalue	-.0058849	.0040227	-1.46	0.148	-.0139041	.0021343
lngasspace	.0487483	.0432349	1.13	0.263	-.0374388	.1349354
gascomp	.0006227	.0005269	1.18	0.241	-.0004277	.0016731
lnmhi	.3453133	.2559573	1.35	0.182	-.1649284	.8555549
lnpop	1.040908	.8916644	1.17	0.247	-.7365924	2.818409
unemploy	-.0334146	.0191787	-1.74	0.086	-.0716467	.0048174
pov	-.001113	.0095211	-0.12	0.907	-.0200929	.0178669
year						
2004	.0996039	.0394299	2.53	0.014	.0210017	.178206
2005	.1386576	.0639727	2.17	0.034	.0111304	.2661847
2006	.1923678	.0750079	2.56	0.012	.0428423	.3418933
2007	.1690787	.0748505	2.26	0.027	.019867	.3182903
2008	.2148611	.0880122	2.44	0.017	.0394119	.3903103
2009	.4217275	.073535	5.74	0.000	.2751382	.5683168
2010	.3208762	.0724327	4.43	0.000	.1764843	.4652681
2011	.3217099	.0717064	4.49	0.000	.1787658	.4646539
_cons	-2.79487	8.604669	-0.32	0.746	-19.94796	14.35822
sigma_u	.67729121					
sigma_e	.22318072					
rho	.90205231	(fraction of variance due to u_i)				

Fixed-effects (within) regression Number of obs = 657
Group variable: county1 Number of groups = 73

R-sq: within = 0.3607 Obs per group: min = 9
between = 0.8257 avg = 9.0
overall = 0.7266 max = 9

F(19,72) = 14.08
corr(u_i, Xb) = 0.7853 Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic53	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-3.711989	3.511484	-1.06	0.294	-10.712	3.288027
lnoilvalue	.0035629	.0043199	0.82	0.412	-.0050487	.0121744
lnoilspace	-.0118765	.0092448	-1.28	0.203	-.0303058	.0065527
oilcomp	-.0001188	.0016307	-0.07	0.942	-.0033695	.0031319
lngasvalue	-.0065189	.0056973	-1.14	0.256	-.0178763	.0048385
lngasspace	.0249661	.0472847	0.53	0.599	-.0692943	.1192265
gascomp	-.0006795	.000794	-0.86	0.395	-.0022622	.0009032
lnmhi	.6892891	.595363	1.16	0.251	-.4975453	1.876123
lnpop	.3621453	.730644	0.50	0.622	-1.094367	1.818658
unemploy	.0042377	.0204534	0.21	0.836	-.0365354	.0450107
pov	.0168087	.0090808	1.85	0.068	-.0012936	.034911
year						
2004	.0492593	.0217335	2.27	0.026	.0059344	.0925842
2005	.0984613	.0424551	2.32	0.023	.0138286	.1830939
2006	.1496323	.0676931	2.21	0.030	.0146885	.284576
2007	.1533563	.0995983	1.54	0.128	-.0451894	.351902
2008	.1947973	.1125651	1.73	0.088	-.0295971	.4191917
2009	.2795678	.0938206	2.98	0.004	.0925398	.4665958
2010	.2844385	.0965144	2.95	0.004	.0920406	.4768365
2011	.3251956	.0993807	3.27	0.002	.1270838	.5233074
_cons	1.766358	5.202292	0.34	0.735	-8.604222	12.13694
sigma_u	1.7212262					
sigma_e	.25684035					
rho	.97821857	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.1137 — Obs per group: min = 9
between = 0.4913 — avg = 9.0
overall = 0.4086 — max = 9

F(19,72) = 8.34
corr(u_i, Xb) = -0.7585 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic54	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-.4589232	.8107759	-0.57	0.573	-2.075175	1.157329
lnoilvalue	-.0002238	.0030528	-0.07	0.942	-.0063094	.0058618
lnoilspace	-.0047554	.0101371	-0.47	0.640	-.0249634	.0154525
oilcomp	.00093	.0004574	2.03	0.046	.0000182	.0018418
lngasvalue	.0045294	.0028346	1.60	0.114	-.0011213	.0101802
lngasspace	-.0087128	.0434373	-0.20	0.842	-.0953034	.0778778
gascomp	.0004379	.0004221	1.04	0.303	-.0004035	.0012793
lnmhi	.940909	.354967	2.65	0.010	.2332953	1.648523
lnpop	-.2245743	.4311128	-0.52	0.604	-1.083982	.6348333
unemploy	-.0193514	.0159749	-1.21	0.230	-.0511968	.012494
pov	.0097548	.0090221	1.08	0.283	-.0082305	.0277401
year						
2004	-.0108368	.0251658	-0.43	0.668	-.061004	.0393303
2005	-.076736	.0452775	-1.69	0.094	-.166995	.0135229
2006	-.2677847	.0578982	-4.63	0.000	-.3832027	-.1523668
2007	-.2791696	.0757488	-3.69	0.000	-.430172	-.1281673
2008	-.2435063	.0864453	-2.82	0.006	-.4158319	-.0711806
2009	-.1440362	.0926964	-1.55	0.125	-.3288231	.0407508
2010	-.215606	.1016604	-2.12	0.037	-.4182622	-.0129498
2011	-.2182497	.1134543	-1.92	0.058	-.4444166	.0079173
_cons	5.792551	6.464877	0.90	0.373	-7.094946	18.68005
sigma_u	1.0987545					
sigma_e	.18949272					
rho	.97111616	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.1466 — Obs per group: min = 9
between = 0.7775 — avg = 9.0
overall = 0.7506 — max = 9

F(19,72) = 8.48
corr(u_i, Xb) = 0.1611 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic55	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-.0409152	1.76581	-0.02	0.982	-3.560992	3.479162
lnoilvalue	.0061214	.004584	1.34	0.186	-.0030166	.0152595
lnoilspace	-.0137745	.0219141	-0.63	0.532	-.0574594	.0299104
oilcomp	.0010603	.0009462	1.12	0.266	-.0008259	.0029465
lngasvalue	.0112085	.0054595	2.05	0.044	.0003252	.0220919
lngasspace	.0400221	.037641	1.06	0.291	-.035014	.1150581
gascomp	-.0005164	.0006946	-0.74	0.460	-.001901	.0008681
lnmhi	-.0273397	.4676008	-0.06	0.954	-.9594849	.9048055
lnpop	1.166315	.4190037	2.78	0.007	.331046	2.001583
unemploy	.0495411	.0301323	1.64	0.105	-.0105266	.1096087
pov	.0114746	.0135496	0.85	0.400	-.015536	.0384851
year						
2004	.037216	.059967	0.62	0.537	-.0823259	.1567579
2005	.1060047	.064735	1.64	0.106	-.0230422	.2350515
2006	.1362595	.0818484	1.66	0.100	-.0269023	.2994213
2007	.1841735	.1056702	1.74	0.086	-.0264761	.3948232
2008	.2605282	.1245037	2.09	0.040	.0123347	.5087217
2009	.1591352	.0979651	1.62	0.109	-.0361546	.354425
2010	.0981611	.0949066	1.03	0.304	-.0910318	.2873539
2011	.1783592	.1051276	1.70	0.094	-.0312089	.3879272
_cons	-.8604244	4.47852	-0.19	0.848	-9.78819	8.067342
sigma_u	.66610838					
sigma_e	.290972					
rho	.83976097	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 656
Group variable: county1 — Number of groups = 73

R-sq: within = 0.1129 — Obs per group: min = 8
between = 0.7019 — avg = 9.0
overall = 0.6828 — max = 9

F(19,72) = 3.36
corr(u_i, Xb) = 0.2412 — Prob > F = 0.0001

(Std. Err. adjusted for 73 clusters in county1)

lnsic56	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-1.783111	2.704247	-0.66	0.512	-7.173929	3.607707
lnoilvalue	.000106	.01352	0.01	0.994	-.0268456	.0270576
lnoilspace	.0126657	.0119117	1.06	0.291	-.0110798	.0364113
oilcomp	-.0024144	.0024518	-0.98	0.328	-.0073021	.0024732
lngasvalue	.0048754	.0124998	0.39	0.698	-.0200425	.0297933
lngasspace	.0804901	.074432	1.08	0.283	-.0678874	.2288675
gascomp	.000113	.0014009	0.08	0.936	-.0026796	.0029057
lnmhi	1.186542	.6035433	1.97	0.053	-.0165996	2.389683
lnpop	1.791653	1.20803	1.48	0.142	-.6165119	4.199817
unemploy	-.0374522	.0358951	-1.04	0.300	-.1090077	.0341033
pov	.0013879	.0184551	0.08	0.940	-.0354017	.0381776
year						
2004	-.0951188	.0641072	-1.48	0.142	-.2229142	.0326766
2005	-.0059091	.1046692	-0.06	0.955	-.2145633	.2027451
2006	-.148463	.1205733	-1.23	0.222	-.3888214	.0918954
2007	-.2601481	.1617547	-1.61	0.112	-.5826002	.062304
2008	-.1933948	.1879393	-1.03	0.307	-.568045	.1812554
2009	-.0307782	.2066558	-0.15	0.882	-.4427389	.3811826
2010	.0272781	.2162683	0.13	0.900	-.4038449	.4584011
2011	.1071359	.2371942	0.45	0.653	-.3657021	.5799739
_cons	-21.81029	14.7609	-1.48	0.144	-51.23561	7.615034
sigma_u	1.4255544					
sigma_e	.46733225					
rho	.90295967	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.2800 — Obs per group: min = 9
between = 0.8492 — avg = 9.0
overall = 0.8273 — max = 9

F(19,72) = 12.24
corr(u_i, Xb) = 0.5969 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic57	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-2.605829	1.631676	-1.60	0.115	-5.858516	.6468587
lnoilvalue	.00954	.0057775	1.65	0.103	-.0019773	.0210573
lnoilspace	.00879	.0140041	0.63	0.532	-.0191266	.0367067
oilcomp	.0002307	.0008996	0.26	0.798	-.0015626	.002024
lngasvalue	.0002103	.0043458	0.05	0.962	-.0084529	.0088736
lngasspace	-.0028437	.0401231	-0.07	0.944	-.0828278	.0771403
gascomp	.0009799	.0005441	1.80	0.076	-.0001048	.0020646
lnmhi	.7832492	.3008532	2.60	0.011	.1835093	1.382989
lnpop	.9615656	.4805999	2.00	0.049	.0035073	1.919624
unemploy	-.0136607	.0165094	-0.83	0.411	-.0465717	.0192503
pov	.0016821	.0108871	0.15	0.878	-.020021	.0233852
year						
2004	.1454999	.0626429	2.32	0.023	.0206235	.2703763
2005	.147756	.0861411	1.72	0.091	-.0239632	.3194752
2006	.1820637	.0895411	2.03	0.046	.0035668	.3605607
2007	.2046089	.0978248	2.09	0.040	.0095987	.399619
2008	.2241751	.1138431	1.97	0.053	-.002767	.4511171
2009	.3193136	.0879059	3.63	0.001	.1440765	.4945508
2010	.1355735	.0979464	1.38	0.171	-.059679	.3308261
2011	.1792899	.1171985	1.53	0.130	-.054341	.4129208
_cons	-6.61778	5.548817	-1.19	0.237	-17.67915	4.443585
sigma_u	.77164199					
sigma_e	.27259078					
rho	.88905239	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.6110 — Obs per group: min = 9
between = 0.9085 — avg = 9.0
overall = 0.9007 — max = 9

F(19,72) = 26.23
corr(u_i, Xb) = 0.6696 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic58	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-1.036974	.8208257	-1.26	0.211	-2.67326	.5993119
lnoilvalue	.0021571	.0024253	0.89	0.377	-.0026776	.0069919
lnoilspace	.0039964	.003005	1.33	0.188	-.001994	.0099869
oilcomp	-.0005001	.0005847	-0.86	0.395	-.0016657	.0006656
lngasvalue	-.0022423	.0023214	-0.97	0.337	-.00687	.0023853
lngasspace	.061689	.0317932	1.94	0.056	-.0016897	.1250676
gascomp	.0002735	.000293	0.93	0.354	-.0003106	.0008576
lnmhi	-.063853	.1455257	-0.44	0.662	-.3539533	.2262472
lnpop	1.076251	.280333	3.84	0.000	.5174176	1.635085
unemploy	-.0148043	.0107099	-1.38	0.171	-.0361541	.0065455
pov	.0023842	.0051387	0.46	0.644	-.0078596	.012628
year						
2004	.0580343	.0146315	3.97	0.000	.028867	.0872016
2005	.1194272	.0294814	4.05	0.000	.0606571	.1781973
2006	.1841723	.0333227	5.53	0.000	.1177446	.2505999
2007	.2205901	.0426466	5.17	0.000	.1355758	.3056045
2008	.2958912	.0481111	6.15	0.000	.1999835	.3917989
2009	.424392	.042465	9.99	0.000	.3397396	.5090444
2010	.4071583	.0424879	9.58	0.000	.3224601	.4918564
2011	.4570217	.0443752	10.30	0.000	.3685614	.545482
_cons	1.384184	3.110062	0.45	0.658	-4.815611	7.583979
sigma_u	.61341028					
sigma_e	.13948222					
rho	.95083664	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.3409 — Obs per group: min = 9
between = 0.8670 — avg = 9.0
overall = 0.8522 — max = 9

F(19,72) = 21.11
corr(u_i, Xb) = 0.4586 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic59	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-4.779193	1.346034	-3.55	0.001	-7.462463	-2.095922
lnoilvalue	.0022316	.0037235	0.60	0.551	-.0051911	.0096543
lnoilspace	.0154254	.0061205	2.52	0.014	.0032245	.0276263
oilcomp	-.0006228	.0008025	-0.78	0.440	-.0022225	.0009769
lngasvalue	.0064071	.0056323	1.14	0.259	-.0048207	.0176348
lngasspace	.0358326	.0319748	1.12	0.266	-.0279081	.0995733
gascomp	.001086	.0007851	1.38	0.171	-.000479	.002651
lnmhi	-.3892158	.2717415	-1.43	0.156	-.9309226	.1524911
lnpop	1.097221	.3244595	3.38	0.001	.4504229	1.744019
unemploy	.0041765	.0177903	0.23	0.815	-.0312878	.0396408
pov	-.0121099	.0065896	-1.84	0.070	-.0252461	.0010262
year						
2004	.0948887	.0350527	2.71	0.008	.0250123	.164765
2005	.1067652	.0424571	2.51	0.014	.0221285	.191402
2006	-.0135373	.0661481	-0.20	0.838	-.1454012	.1183265
2007	.2890342	.07818	3.70	0.000	.1331852	.4448832
2008	.2852928	.0902394	3.16	0.002	.1054038	.4651818
2009	.3530218	.0591485	5.97	0.000	.2351114	.4709321
2010	.3040223	.0582593	5.22	0.000	.1878845	.4201601
2011	.4086777	.0662327	6.17	0.000	.2766453	.5407101
_cons	4.292166	4.594803	0.93	0.353	-4.867407	13.45174
sigma_u	.57440216					
sigma_e	.20225312					
rho	.88969403	(fraction of variance due to u_i)				

Fixed-effects (within) regression Number of obs = 657
Group variable: county1 Number of groups = 73

R-sq: within = 0.6232 Obs per group: min = 9
between = 0.6519 avg = 9.0
overall = 0.6501 max = 9

F(20,72) = 51.65
corr(u_i, Xb) = -0.7422 Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnretail	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-.6661983	.556226	-1.20	0.235	-1.775015	.442618
lnmsa	.3793007	.073904	5.13	0.000	.2319758	.5266255
lnoilvalue	.0024297	.0018687	1.30	0.198	-.0012954	.0061549
lnoilspace	-.0012518	.0051285	-0.24	0.808	-.0114752	.0089717
oilcomp	.0001358	.0003712	0.37	0.716	-.0006042	.0008757
lngasvalue	-.0011156	.0025991	-0.43	0.669	-.0062967	.0040656
lngasspace	.024741	.0211745	1.17	0.246	-.0174695	.0669516
gascomp	.0005687	.0001749	3.25	0.002	.0002201	.0009173
lnmhi	.2640393	.1511041	1.75	0.085	-.0371812	.5652597
lnpop	.9058693	.1917104	4.73	0.000	.5237017	1.288037
unemploy	-.0041477	.0080769	-0.51	0.609	-.0202486	.0119532
pov	.0037722	.00452	0.83	0.407	-.0052383	.0127827
year						
2004	.0455896	.0131413	3.47	0.001	.0193929	.0717863
2005	.0807235	.0259168	3.11	0.003	.0290594	.1323876
2006	.0603272	.0278093	2.17	0.033	.0048905	.115764
2007	.1005893	.0342548	2.94	0.004	.0323037	.1688749
2008	.1543116	.0380268	4.06	0.000	.0785066	.2301166
2009	.2356691	.0387843	6.08	0.000	.1583539	.3129843
2010	.1834541	.0433221	4.23	0.000	.0970931	.2698151
2011	.2201369	.0485695	4.53	0.000	.1233154	.3169584
_cons	1.5524	2.671296	0.58	0.563	-3.772732	6.877532
sigma_u	1.214402					
sigma_e	.09999173					
rho	.99326607	(fraction of variance due to u_i)				

Fixed-effects (within) regression Number of obs = 657
Group variable: county1 Number of groups = 73

R-sq: within = 0.2232 Obs per group: min = 9
between = 0.0404 avg = 9.0
overall = 0.0170 max = 9

F(20,72) = 3.32
corr(u_i, Xb) = -0.8742 Prob > F = 0.0001

(Std. Err. adjusted for 73 clusters in county1)

lnuse	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	11.58172	17.19057	0.67	0.503	-22.68704	45.85049
lnmsa	1.746348	2.712466	0.64	0.522	-3.660853	7.15355
lnoilvalue	.0414531	.036674	1.13	0.262	-.0316551	.1145613
lnoilspace	.0292611	.0764147	0.38	0.703	-.1230689	.181591
oilcomp	.0075167	.0168824	0.45	0.657	-.0261377	.0411712
lngasvalue	-.0490152	.0268644	-1.82	0.072	-.1025685	.0045381
lngasspace	.3518137	.3928818	0.90	0.374	-.4313819	1.135009
gascomp	.0042268	.0064494	0.66	0.514	-.0086297	.0170834
lnmhi	5.488102	3.225286	1.70	0.093	-.9413893	11.91759
lnpop	-1.295252	4.157557	-0.31	0.756	-9.583191	6.992687
unemploy	-.0498742	.1390359	-0.36	0.721	-.3270373	.2272888
pov	.070658	.0810644	0.87	0.386	-.090941	.2322569
year						
2004	.2835329	.2737249	1.04	0.304	-.2621278	.8291935
2005	.0075869	.3390625	0.02	0.982	-.6683219	.6834957
2006	.2994667	.5353246	0.56	0.578	-.7676834	1.366617
2007	.4038695	.708359	0.57	0.570	-1.008218	1.815957
2008	.4707453	.9259724	0.51	0.613	-1.375147	2.316638
2009	1.300347	.9414887	1.38	0.172	-.5764768	3.17717
2010	1.344345	1.066085	1.26	0.211	-.780856	3.469546
2011	1.391559	1.01809	1.37	0.176	-.637967	3.421085
_cons	-47.27141	53.7223	-0.88	0.382	-154.3649	59.82204
sigma_u	7.9860458					
sigma_e	2.1241466					
rho	.93392781	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.0932 — Obs per group: min = 9
between = 0.0801 — avg = 9.0
overall = 0.0199 — max = 9

F(20,72) = 13.50
corr(u_i, Xb) = -0.9040 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lncre	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	3.124467	2.35126	1.33	0.188	-1.562684	7.811618
lnmsa	-.1124662	.1208809	-0.93	0.355	-.3534378	.1285055
lnoilvalue	.0245063	.0160461	1.53	0.131	-.0074811	.0564937
lnoilspace	-.0820885	.0555012	-1.48	0.143	-.1927282	.0285512
oilcomp	.0012268	.0008051	1.52	0.132	-.0003781	.0028316
lngasvalue	.0331906	.0226754	1.46	0.148	-.012012	.0783932
lngasspace	.0206464	.0311802	0.66	0.510	-.0415103	.0828031
gascomp	.0008483	.0005513	1.54	0.128	-.0002507	.0019473
lnmhi	-1.342458	1.132132	-1.19	0.240	-3.599323	.9144062
lnpop	-.8422897	.7514408	-1.12	0.266	-2.34026	.6556803
unemploy	.0258246	.0220478	1.17	0.245	-.018127	.0697762
pov	.0366007	.0474083	0.77	0.443	-.0579059	.1311073
year						
2004	-.0581389	.1008013	-0.58	0.566	-.2590826	.1428048
2005	-.0932167	.2032279	-0.46	0.648	-.4983443	.3119108
2006	.1527614	.0869785	1.76	0.083	-.0206272	.3261499
2007	.3988352	.1965879	2.03	0.046	.0069444	.7907261
2008	.5317368	.2685952	1.98	0.052	-.0036978	1.067171
2009	.4735796	.1530984	3.09	0.003	.1683835	.7787757
2010	.4811297	.1736868	2.77	0.007	.1348914	.827368
2011	.5791984	.2528641	2.29	0.025	.075123	1.083274
_cons	36.67794	17.77629	2.06	0.043	1.241549	72.11432
sigma_u	1.5242785					
sigma_e	.74086086					
rho	.80890754	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.3787 — Obs per group: min = 9
between = 0.5556 — avg = 9.0
overall = 0.5463 — max = 9

F(20,72) = 12.58
corr(u_i, Xb) = -0.8754 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic52	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-.5595471	1.230673	-0.45	0.651	-3.012849	1.893754
lnmsa	.6492501	.3325748	1.95	0.055	-.0137257	1.312226
lnoilvalue	.0022931	.0029148	0.79	0.434	-.0035174	.0081036
lnoilspace	-.0005237	.0055808	-0.09	0.925	-.0116487	.0106014
oilcomp	.0008443	.0008006	1.05	0.295	-.0007516	.0024403
lngasvalue	-.0056747	.0038499	-1.47	0.145	-.0133492	.0019999
lngasspace	.0463644	.0389646	1.19	0.238	-.03131	.1240389
gascomp	.0009372	.0005312	1.76	0.082	-.0001217	.001996
lnmhi	.2733416	.2515587	1.09	0.281	-.2281315	.7748148
lnpop	.8582224	.8729574	0.98	0.329	-.8819863	2.598431
unemploy	-.032406	.0194142	-1.67	0.099	-.0711076	.0062956
pov	-.001446	.0092491	-0.16	0.876	-.0198838	.0169917
year						
2004	.0979885	.0398246	2.46	0.016	.0185996	.1773774
2005	.1387197	.0629802	2.20	0.031	.0131709	.2642684
2006	.1912423	.0759158	2.52	0.014	.0399069	.3425777
2007	.1726881	.0760255	2.27	0.026	.0211339	.3242422
2008	.2200589	.0891756	2.47	0.016	.0422906	.3978272
2009	.4225453	.0743847	5.68	0.000	.2742621	.5708285
2010	.3174936	.0725193	4.38	0.000	.1729291	.4620582
2011	.3211568	.072386	4.44	0.000	.1768581	.4654556
_cons	-1.513492	8.232478	-0.18	0.855	-17.92464	14.89765
sigma_u	2.0981011					
sigma_e	.2203992					
rho	.98908557	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.3661 — Obs per group: min = 9
between = 0.3440 — avg = 9.0
overall = 0.3437 — max = 9

F(20,72) = 13.28
corr(u_i, Xb) = -0.3047 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic53	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-3.591315	3.471316	-1.03	0.304	-10.51126	3.328627
lnmsa	.4211114	.286037	1.47	0.145	-.1490931	.9913158
lnoilvalue	.0032873	.0044073	0.75	0.458	-.0054986	.0120731
lnoilspace	-.0117115	.0092927	-1.26	0.212	-.0302362	.0068132
oilcomp	.0000597	.0016078	0.04	0.970	-.0031455	.0032649
lngasvalue	-.0063826	.0059441	-1.07	0.287	-.0182319	.0054667
lngasspace	.0234198	.0473219	0.49	0.622	-.0709147	.1177543
gascomp	-.0004756	.0007497	-0.63	0.528	-.00197	.0010189
lnmhi	.6426075	.6006168	1.07	0.288	-.5547003	1.839915
lnpop	.2436532	.727236	0.34	0.739	-1.206065	1.693372
unemploy	.0048919	.0205394	0.24	0.812	-.0360526	.0458364
pov	.0165927	.0091091	1.82	0.073	-.0015659	.0347513
year						
2004	.0482115	.0221695	2.17	0.033	.0040174	.0924056
2005	.0985015	.0422781	2.33	0.023	.0142217	.1827814
2006	.1489022	.0685597	2.17	0.033	.012231	.2855734
2007	.1556974	.1001286	1.55	0.124	-.0439053	.3553001
2008	.1981687	.1131065	1.75	0.084	-.027305	.4236424
2009	.2800982	.093632	2.99	0.004	.0934463	.4667501
2010	.2822446	.0960808	2.94	0.004	.0907111	.4737781
2011	.3248369	.0991812	3.28	0.002	.1271227	.522551
_cons	2.597475	5.197113	0.50	0.619	-7.76278	12.95773
sigma_u	1.7592057					
sigma_e	.2559838					
rho	.97926556	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.1138 — Obs per group: min = 9
between = 0.3499 — avg = 9.0
overall = 0.2841 — max = 9

F(20,72) = 7.94
corr(u_i, Xb) = -0.6731 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic54	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-.4531005	.8118633	-0.56	0.579	-2.07152	1.165319
lnmsa	.0203195	.0678057	0.30	0.765	-.1148487	.1554877
lnoilvalue	-.0002371	.0030517	-0.08	0.938	-.0063205	.0058463
lnoilspace	-.0047475	.0101411	-0.47	0.641	-.0249633	.0154684
oilcomp	.0009386	.000463	2.03	0.046	.0000157	.0018615
lngasvalue	.004536	.0028258	1.61	0.113	-.0010972	.0101692
lngasspace	-.0087874	.0435135	-0.20	0.841	-.0955299	.0779551
gascomp	.0004477	.0004252	1.05	0.296	-.0003999	.0012953
lnmhi	.9386565	.3556706	2.64	0.010	.2296401	1.647673
lnpop	-.2302918	.4399598	-0.52	0.602	-1.107336	.6467521
unemploy	-.0193198	.0159827	-1.21	0.231	-.0511807	.0125411
pov	.0097444	.0090277	1.08	0.284	-.008252	.0277408
year						
2004	-.0108874	.0251683	-0.43	0.667	-.0610594	.0392846
2005	-.0767341	.0453149	-1.69	0.095	-.1670676	.0135994
2006	-.26782	.0579906	-4.62	0.000	-.3834222	-.1522177
2007	-.2790567	.0758085	-3.68	0.000	-.4301781	-.1279353
2008	-.2433436	.0865081	-2.81	0.006	-.4157944	-.0708927
2009	-.1440106	.0927902	-1.55	0.125	-.3289845	.0409634
2010	-.2157119	.101813	-2.12	0.038	-.4186724	-.0127514
2011	-.218267	.1135923	-1.92	0.059	-.444709	.008175
_cons	5.832654	6.515824	0.90	0.374	-7.156403	18.82171
sigma_u	1.0709598					
sigma_e	.18965722					
rho	.96959244	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.1521 — Obs per group: min = 9
between = 0.5931 — avg = 9.0
overall = 0.5725 — max = 9

F(20,72) = 11.43
corr(u_i, Xb) = -0.7931 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic55	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	.0784415	1.807063	0.04	0.965	-3.523872	3.680755
lnmsa	.4165148	.120293	3.46	0.001	.1767151	.6563145
lnoilvalue	.0058488	.0045679	1.28	0.205	-.0032571	.0149547
lnoilspace	-.0136113	.0219469	-0.62	0.537	-.0573616	.030139
oilcomp	.0012369	.0009241	1.34	0.185	-.0006054	.0030791
lngasvalue	.0113434	.0055237	2.05	0.044	.0003321	.0223546
lngasspace	.0384927	.0375062	1.03	0.308	-.0362745	.1132599
gascomp	-.0003147	.0006985	-0.45	0.654	-.0017072	.0010778
lnmhi	-.0735118	.4695975	-0.16	0.876	-1.009637	.8626138
lnpop	1.049116	.3972465	2.64	0.010	.2572194	1.841012
unemploy	.0501882	.0302427	1.66	0.101	-.0100995	.1104758
pov	.0112609	.0136184	0.83	0.411	-.0158869	.0384087
year						
2004	.0361797	.0599894	0.60	0.548	-.0834069	.1557663
2005	.1060445	.0643276	1.65	0.104	-.0221902	.2342792
2006	.1355374	.0816111	1.66	0.101	-.0271514	.2982263
2007	.1864891	.1055075	1.77	0.081	-.0238362	.3968144
2008	.2638628	.1241798	2.12	0.037	.0163149	.5114106
2009	.1596599	.0982338	1.63	0.108	-.0361656	.3554853
2010	.0959911	.0954951	1.01	0.318	-.094375	.2863571
2011	.1780044	.106588	1.67	0.099	-.0344749	.3904836
_cons	-.0383792	4.517459	-0.01	0.993	-9.043768	8.96701
sigma_u	1.462857					
sigma_e	.29029412					
rho	.96211228	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 656
Group variable: county1 — Number of groups = 73

R-sq: within = 0.1130 — Obs per group: min = 8
between = 0.5923 — avg = 9.0
overall = 0.5767 — max = 9

F(20,72) = 3.62
corr(u_i, Xb) = 0.1644 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic56	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-1.808983	2.720674	-0.66	0.508	-7.232547	3.614581
lnmsa	-.0917852	.2558662	-0.36	0.721	-.6018451	.4182747
lnoilvalue	.0001664	.0135314	0.01	0.990	-.0268079	.0271407
lnoilspace	.0126293	.0119227	1.06	0.293	-.0111382	.0363967
oilcomp	-.0024534	.0024624	-1.00	0.322	-.0073622	.0024554
lngasvalue	.0048459	.0124952	0.39	0.699	-.0200629	.0297546
lngasspace	.0808214	.0741959	1.09	0.280	-.0670854	.2287283
gascomp	.0000682	.0014546	0.05	0.963	-.0028315	.002968
lnmhi	1.196762	.6095488	1.96	0.053	-.0183513	2.411875
lnpop	1.817429	1.230063	1.48	0.144	-.6346576	4.269515
unemploy	-.0375938	.0359081	-1.05	0.299	-.1091752	.0339876
pov	.0014339	.0184815	0.08	0.938	-.0354083	.0382761
year						
2004	-.0948907	.0640794	-1.48	0.143	-.2226307	.0328494
2005	-.0059102	.1046921	-0.06	0.955	-.2146102	.2027898
2006	-.148297	.1205649	-1.23	0.223	-.3886387	.0920448
2007	-.2606863	.1617089	-1.61	0.111	-.5830472	.0616745
2008	-.1941273	.1879227	-1.03	0.305	-.5687444	.1804898
2009	-.0309021	.2068347	-0.15	0.882	-.4432195	.3814153
2010	.02775	.2166067	0.13	0.898	-.4040476	.4595476
2011	.1072049	.2375154	0.45	0.653	-.3662734	.5806832
_cons	-21.99104	14.92017	-1.47	0.145	-51.73386	7.751773
sigma_u	1.6398606					
sigma_e	.46771882					
rho	.92477024	(fraction of variance due to u_i)				

Fixed-effects (within) regression Number of obs = 657
Group variable: county1 Number of groups = 73

R-sq: within = 0.2818 Obs per group: min = 9
between = 0.7749 avg = 9.0
overall = 0.7577 max = 9

F(20,72) = 12.16
corr(u_i, Xb) = -0.2315 Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic57	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-2.537037	1.608705	-1.58	0.119	-5.743931	.669857
lnmsa	.2400588	.1505248	1.59	0.115	-.060007	.5401245
lnoilvalue	.0093829	.0057927	1.62	0.110	-.0021647	.0209305
lnoilspace	.0088841	.0140687	0.63	0.530	-.0191614	.0369296
oilcomp	.0003325	.0008883	0.37	0.709	-.0014383	.0021032
lngasvalue	.000288	.0044084	0.07	0.948	-.0085	.009076
lngasspace	-.0037252	.0402804	-0.09	0.927	-.0840227	.0765723
gascomp	.0010962	.0005752	1.91	0.061	-.0000504	.0022427
lnmhi	.7566379	.3050862	2.48	0.015	.1484596	1.364816
lnpop	.894018	.4855395	1.84	0.070	-.0738872	1.861923
unemploy	-.0132877	.0163963	-0.81	0.420	-.0459732	.0193977
pov	.0015589	.0109513	0.14	0.887	-.020272	.0233899
year						
2004	.1449026	.062755	2.31	0.024	.0198028	.2700025
2005	.147779	.0861471	1.72	0.091	-.0239521	.31951
2006	.1816476	.089862	2.02	0.047	.002511	.3607842
2007	.2059434	.0979757	2.10	0.039	.0106324	.4012544
2008	.226097	.1141762	1.98	0.051	-.0015092	.4537031
2009	.319616	.0883324	3.62	0.001	.1435285	.4957035
2010	.1343228	.0984741	1.36	0.177	-.0619816	.3306273
2011	.1790854	.117862	1.52	0.133	-.0558683	.414039
_cons	-6.143993	5.638663	-1.09	0.280	-17.38446	5.096477
sigma_u	.7721502					
sigma_e	.27250087					
rho	.8892472	(fraction of variance due to u_i)				

Fixed-effects (within) regression — Number of obs = 657
Group variable: county1 — Number of groups = 73

R-sq: within = 0.6229 — Obs per group: min = 9
between = 0.6030 — avg = 9.0
overall = 0.6006 — max = 9

F(20,72) = 51.97
corr(u_i, Xb) = -0.7487 — Prob > F = 0.0000

(Std. Err. adjusted for 73 clusters in county1)

lnsic58	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-.9121118	.779877	-1.17	0.246	-2.466768	.6425446
lnmsa	.4357275	.0547708	7.96	0.000	.3265439	.544911
lnoilvalue	.0018719	.0024898	0.75	0.455	-.0030914	.0068353
lnoilspace	.0041672	.0030729	1.36	0.179	-.0019586	.010293
oilcomp	-.0003154	.0005134	-0.61	0.541	-.0013388	.0007081
lngasvalue	-.0021013	.0023768	-0.88	0.380	-.0068394	.0026369
lngasspace	.0600891	.0302345	1.99	0.051	-.0001824	.1203605
gascomp	.0004846	.000255	1.90	0.061	-.0000238	.0009929
lnmhi	-.1121549	.1458605	-0.77	0.444	-.4029224	.1786126
lnpop	.9536464	.2659928	3.59	0.001	.4233994	1.483893
unemploy	-.0141273	.010912	-1.29	0.200	-.0358801	.0076254
pov	.0021606	.0050905	0.42	0.673	-.0079872	.0123085
year						
2004	.0569502	.0150014	3.80	0.000	.0270454	.086855
2005	.1194689	.028583	4.18	0.000	.0624896	.1764481
2006	.1834169	.0335773	5.46	0.000	.1164818	.250352
2007	.2230125	.0425907	5.24	0.000	.1381095	.3079154
2008	.2993796	.047208	6.34	0.000	.2052721	.3934871
2009	.4249409	.0422136	10.07	0.000	.3407896	.5090922
2010	.4048881	.0426155	9.50	0.000	.3199357	.4898405
2011	.4566506	.0446884	10.22	0.000	.3675659	.5457353
_cons	2.244148	2.997758	0.75	0.457	-3.731774	8.22007
sigma_u	1.4207831					
sigma_e	.13745648					
rho	.99072682	(fraction of variance due to u_i)				

```
Fixed-effects (within) regression               Number of obs      =       657
Group variable: county1                         Number of groups   =        73

R-sq:  within  = 0.3509                         Obs per group: min =         9
       between = 0.6766                                        avg =       9.0
       overall = 0.6655                                        max =         9

                                                F(20,72)           =     21.68
corr(u_i, Xb)  = -0.8173                        Prob > F           =    0.0000

                                    (Std. Err. adjusted for 73 clusters in county1)
```

lnsic59	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
taxrate	-4.6515	1.383378	-3.36	0.001	-7.409214	-1.893787
lnmsa	.4456031	.1435644	3.10	0.003	.1594126	.7317935
lnoilvalue	.00194	.0037258	0.52	0.604	-.0054873	.0093673
lnoilspace	.0156	.0060784	2.57	0.012	.0034829	.0277171
oilcomp	-.0004339	.0007564	-0.57	0.568	-.0019417	.0010739
lngasvalue	.0065513	.0056505	1.16	0.250	-.0047126	.0178153
lngasspace	.0341964	.0317232	1.08	0.285	-.0290427	.0974355
gascomp	.0013018	.0007477	1.74	0.086	-.0001887	.0027923
lnmhi	-.4386124	.2707792	-1.62	0.110	-.9784008	.101176
lnpop	.9718375	.3255783	2.98	0.004	.3228089	1.620866
unemploy	.0048688	.0180411	0.27	0.788	-.0310954	.040833
pov	-.0123385	.0063806	-1.93	0.057	-.0250581	.000381
year						
2004	.09378	.0351662	2.67	0.009	.0236774	.1638825
2005	.1068079	.0415489	2.57	0.012	.0239817	.189634
2006	-.0143098	.065484	-0.22	0.828	-.1448498	.1162302
2007	.2915114	.0773791	3.77	0.000	.1372589	.4457639
2008	.2888602	.0894398	3.23	0.002	.1105653	.4671551
2009	.3535831	.05984	5.91	0.000	.2342943	.4728719
2010	.3017007	.05862	5.15	0.000	.1848439	.4185575
2011	.4082981	.0660512	6.18	0.000	.2766274	.5399688
_cons	5.171621	4.555243	1.14	0.260	-3.909091	14.25233
sigma_u	1.3833016					
sigma_e	.20088816					
rho	.97934568	(fraction of variance due to u_i)				

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Appendix C depicts the STATA output of correlation tests between production and well completions.

```
. corr lnoilvalue oilcomp
(obs=657)

             | lnoilv~e  oilcomp
-------------+------------------
  lnoilvalue |   1.0000
     oilcomp |   0.3913   1.0000
```

```
. corr lngasvalue gascomp
(obs=657)

             | lngasv~e  gascomp
-------------+------------------
  lngasvalue |   1.0000
     gascomp |   0.4137   1.0000
```

VITA

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